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Our Minds and their Bodies

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LONDON

Oxford University Press

Humphrey Milford

1925

Oxford University Press
London Edinburgh Glasgow Copenhagen
New York Toronto Melbourne Cape Town
Bombay Calcutta Madras Shanghai
Humphrey Milford Publisher to the UNIVERSITY

Printed in England

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The Attitude of Common Sense

In the European tradition, and for more than two millennia, the attitude of common sense towards the problems which concern the relation of a mind to its body, or of a body to its mind, has been, on the whole, predominantly and persistently dualistic. By common sense, in this connexion, I mean the trend of current opinion, not specially trained or instructed; and by dualism I mean, not any philosophical theory of an 'ugly broad ditch' between two utterly disparate sets of substances, but a tenacious conviction that our bodies are very different indeed from our minds; and so that, although the two are partners, they are *not* the same thing.

This statement may certainly be challenged on the ground that the usual opinion is only nominally and, so to say, officially dualistic. For common sense, we are told, this official dualism breaks down under cross-examination and becomes instead a vacillating and hesitant variety of materialism. Plain people are materialists in their heads, even if their lips and their hearts are on the side of a two-fold reality consisting of spirit as well as of matter. For the proof, it is alleged, we have only to consider the cruder forms of spiritism. During all these centuries preachers and teachers have informed us, not indeed unanimously but certainly for the most part, that our spirits are things invisible and intangible and in no sense a subtle breath or a dry and tenuous flame. Their hearers, however, we are told, for the most part, do not believe them. Instead, those hearers look for photographic evidence of 'auras' and 'ectoplasms', and make no serious effort to discriminate between visible ghostly substances

and the spirits which (perhaps) might inform them. What is more, the preachers and teachers themselves, despite all their brave words, are frequently not unready to forget what their theories ought to inculcate; and those who are not spiritists, it is claimed, usually show by their arguments that their objections depend upon materialistic grounds. The auras and ectoplasms, according to the sceptics, are for the most part muslin, or at any rate faked. There are no fairies except fairies made of paper, and no nectar except ether or some product of asphyxiation. In other words, both parties keep to the same plane of argument. Both seem to agree that if sorcery could prove its existence in the material world, the existence of these spirits would be demonstrated; and both must therefore be supposed to believe that if there is no such proof, there is no need to believe in the spirits at all.

Allegations of this description, however, seem in reality very little to the purpose. The question at issue in spiritism is the existence of human spirits disconnected with human bodies, or again (as in telekinesis or the vagaries of poltergeists) the existence of supernormal influence of certain minds upon matter outside their own bodies; and it is plain that debates upon these problems have very little bearing indeed upon the relation, during life, between a thinking mind and a pulsing body. It is quite consistent, surely, to maintain that our minds cannot act directly upon a harp or upon a trumpet, and that they *can* act directly upon the nerves which set our fingers in motion. In the normal way, it is past denying that most of us do believe that our minds *are* very different from our bodies when both are going concerns, united in the partnership which we call human life.

I do not say that common sense has always been of this opinion. Anthropologists, indeed, are accustomed to inform us that it has

not, although, to be sure, they also inform us that primitive minds are quite as likely to attribute some variety of soulfulness to inanimate things as to overlook the properly mental characteristics of that which we take nowadays to be spiritual. It is very easy, however, to represent primitive ideas as, in their essence, materialistic. Let us consider, for example, the type of consideration which Sir James Frazer presents with such fullness in the chapter upon 'The Perils of the Soul' in his *Golden Bough*.

'The Malays', he tells us, 'conceive the human soul as a little man, mostly invisible and of the bigness of a thumb, who corresponds in shape, proportion, and even in complexion to the man in whose body he resides' (abridged edition, p. 178). 'The soul is commonly supposed to escape by the natural openings of the body, especially the mouth and nostrils. Hence in Celebes they sometimes fasten fish-hooks to a sick man's nose, navel, and feet, so that if his soul should try to escape, it may be hooked and held fast' (p. 180). The soul is held, literally, to depart in dreams. 'If a Guinea negro wakens with sore bones in the morning, he thinks that his soul has been thrashed by another soul in sleep' (p. 182). Similarly, souls may be trapped by sorcerers. 'Some sorcerers keep regular asylums for strayed souls, and anybody who has lost or mislaid his own soul can always have another one from the asylum on payment of the usual fee. No blame whatever attaches to the men who keep these private asylums or set traps for passing souls; it is their profession, and in the exercise of it they are actuated by no harsh or unkindly feelings' (p. 188). Transmigration of souls, again, is easy in principle, and the perils of the soul are increased owing to the fact that men's shadows and reflections are also their 'souls'. Crocodiles or water-spirits may drag their reflections down. Mirrors should be turned to the wall. One's shadow may be

caught in another man's coffin, and a very ordinary photographer may imprison the ghosts of a whole multitude within his little box.

I need not go on, I think. At this primitive level of thought there is no sharp division between mind and matter. These ghostly reflections and emanations, therefore, are not materialistic in the sense in which 'matter' is contrasted by philosophers with 'mind'. To suppose so, would be to make a philosophy out of a very unphilosophical set of ideas; to make the same mistake, indeed, as grown-up people who are amazed at the 'imagination' of children, and ascribe to romantic fabrication or deliberate make-believe what, in reality, is the result of an uncritical frame of mind where fiction and fact are blended together. Just as children, however, must be credited with a certain rudimentary critical capacity, so primitive peoples should be supposed to be groping, in some measure, towards something that we should call a theory. And this theory, we must also suppose, is not so very spiritual. In short, if our present opinion is dualistic, it has taken us a long time to achieve this dualism; and we may well believe that those ideas which are now so firm a part of our common sense seemed, at the outset, very strange and revolutionary. This, indeed, is precisely what Mr. Burnet would have us think of the perturbing doctrines of Socrates. Our modern idea of the mind, he thinks, was a Socratic discovery. We take for granted to-day what Socrates, the innovator, discovered.

What Socrates really taught, to be sure, is still very much of an enigma. Since he did not write, we have to guess at what he said. The evidence, however, which Mr. Burnet collects in favour of his hypothesis is very pertinent indeed to our present inquiry; for it involves a review of the meanings of 'psyche', or soul, in the whole of Greek literature prior to Socrates' time. Originally, 'psyche' meant breath, we are told, then the breath

of life, or sometimes courage (as perhaps in the snorting of chargers). This breath, it was supposed, was given up at death or in swooning; but the ghost so relinquished was not identified with the thinking principle. On the contrary, thinking, so far as it was supposed to have a definite seat in the body, was considered to be situated in the blood round the heart. The pallid shades in Charon's ferry, similarly, were regarded as physical ghosts, just as the shades in the Odyssey needed draughts of blood in order to take on more than the sorriest semblance of animation. Among the Orphics, indeed, the other world, and ecstatic possession in this one, were questions of the utmost moment, but the enthusiasm of Orphism does not seem to have been allied with any conceptions of the mind that corresponded at all closely to those of the subsequent European tradition. The soul, for the Orphics, on the contrary, was sundered from ordinary waking consciousness and regarded as an occult, occluded, subliminal thing. Greek science, again (or at least its leaders in Ionia) took the soul to be a part of the universal air or fire.

These accordingly were the main Greek opinions; and 'psyche' is never used in Athenian literature before the time of Socrates in any sense which is clearly the same as that implied by our modern 'psychology'. Usually the word meant the 'ghost' which was relinquished at death or in trances. To 'collect your psyche' meant to refrain from swooning. And if 'psyche' was sometimes used in a rare psychological sense, this occasional usage referred to something mysterious and uncanny, perhaps to an oracular sense of kindred, perhaps to whimsical fancies. Psyche was never taken to be the normal waking consciousness, achieving knowledge or error, and capable of attaining worth and righteousness. Yet this is precisely the notion which came later to dominate the European outlook.

The history here briefly set forth is more than an account of

the story of a word, or of an episode in the life of a nimble-witted people. It was the Greeks who laid the foundations of our own intellectual attitude, and the dualism to which I have referred, whether or not any part of it is truly Socratic, corresponds at any rate very closely to much that emerges from this story. When we are challenged, at least, we are disposed to assert that our soul or mind is a thinking intelligent thing whose character appears most plainly when we are fully awake; and (in a vaguer fashion perhaps) we think of it as having the worth and the dignity which properly belong to a spiritual thing. On the other hand, and in a fashion very ill thought out (for the most part), we are accustomed to associate this relatively clear (if insufficient) conception with the more mysterious notion of a furtive subconsciousness which loves trances more than logic, and yet may have a religious significance, deeper if less accessible, than the ordinary moralistic and forensic conception of conscious responsibility. God giveth it to His own in sleep. And mingled with all these notions, with the inconsistency to be expected from an unsifted if prevalent opinion, common sense finds, and accepts in part, the grosser conceptions of ghostly ectoplasms and a blood which is the life.

The important question, of course, is not whether common sense is convinced of this or that, but whether its convictions are true in fact. It is hardly to be supposed, however, that the truth in these perplexing matters will ever be other than disputable, and there are many reasons why the plain man's opinion, even if it is instructively inconsistent, is both important in itself and a suitable starting-point for more strenuous investigations. Current beliefs, to be sure, are not too articulate. *Per contra*, it is also extremely unlikely that they are totally erroneous. Far too much depends upon them. In the business of living we have to distinguish between a sound mind, as we call it, and mental organizations which require a different social treatment. We

know what is meant by the difference between the physical and the mental aspects, say, of education. We have to discriminate between argument and gymnastics, between sophistry and drugs. In a word, our distinctions correspond to *something*. Again, our sciences take their rise from common opinion and seldom part company utterly with the common-sense point of view. They are the refinements of experts and specialists upon matters which the laity can judge in a varying degree; and even if it is admitted that expert opinion very often modifies the common one, so that common sense may sometimes find itself only yesterday's science, musty and bewildered and *passé*, there are the strictest limits to any process of the kind. We have to distinguish, in fact, between those matters in which the laity may form an intelligent opinion and those in which it may not. When the solution of a problem depends upon some elaborate technique in the laboratory, or upon the intellectual technique of a prolonged mathematical demonstration, common sense, at its best, has to accept results upon faith, but when the elements of the problem can be stripped of technique and of tools and of jargon, there is an approximate equality between all who can use their wits. The problem of the relations between mind and body, as we shall see, is essentially of the latter kind. The sciences have taught us much concerning it—physiology and medicine on the one side, psychology (somewhat less successfully) upon the other. None of them, however, has advanced so far in this matter as to make common opinion of no account.

I propose, therefore, to begin our discussion by asking, in the first place, what are the grounds, in general, upon which this dualism of current opinion chiefly relies; and, in the second place, what are the facts of common experience which, broadly and in the main, may be supposed to tally with these general grounds. Thereafter I shall proceed to consider what modification, if any,

in this attitude is decreed by the discoveries of the relevant sciences.

The general grounds which indicate, very forcibly if not entirely conclusively, that our minds are very different indeed from our physical bodies are, firstly, that our acquaintance with mind is quite distinct from our acquaintance with bodies and their states; and secondly, that the insight we attain into the 'mental' facts revealed by this distinctive mode of acquaintance, appears to indicate properties and functions of the mind which are not only unexplained by physical causes but belong, in all seeming, to a different order of existence.

Our knowledge of physical nature is derived, in the last analysis, from sight, hearing, taste, and the other external senses. These external senses acquaint us with the facts in the world; and, through them, we observe the surface of our own bodies. Similarly they enable us to observe the bodies of other people, both superficially and, if we are surgeons, internally also.

It is clear, however, that each of us has, in his own person, a source of acquaintance concerning himself and his states which is different from sight or hearing or other such senses, and is for ever shut off from the surgeon or any other observer. The dentist, to choose the stock illustration, sees the twitching of our nerves, or the swelling in our gums. But it is we who feel the pain. A great part of medical or surgical evidence, indeed, has to rely, for this reason, upon the patient's word. It is a record of the sufferings of various patients connected with tumours, or wounds, or bruises. And sometimes there is nothing but the suffering, without visible sign.

An objector may reply, however (and with a very fair show of reason), that this difference in our mode of acquaintance does not, of itself, establish any fundamental discrepancy between the facts which are revealed in these different ways. The twitching

of the nerve, he may say, which the dentist *sees* and the patient *feels*, are, after all, the same bodily event. The patient has *only* an 'inner' acquaintance, and the dentist has *only* an 'outer' acquaintance; but both of them are acquainted with the same event, the one from the inside and the other from afar.

This is as it may be. There is surely something *new* in the affair since the physical event might continue if the patient were anaesthetized; and although the anaesthetic certainly affects the patient's physical condition, the particular and highly important difference which we call the abolition of suffering and of consciousness *does* appear to be rather distinctive. We may concede, however, that if these 'inner' sensations, or sufferings, or enjoyments, were *only* of the type we have illustrated, the evidence for dualism, or for any non-physical order of being, would be decidedly slender. The patient's anguish, not improbably, is literally a state of his body, although it is not a state that other people can directly observe. The others can only imagine it sympathetically. The order of our psychical existence, however, is not at all restricted to those organic sensations which, like toothache and nausea, seem to affect and to occupy a certain volume within our skins. On the contrary, these organic sensations are little more than 'somatic resonance'; and this bodily echo may only be *allied* to that psychical being which we are accustomed to call ourselves.

In any case, our psychical being, taken broadly and with understanding, plainly *appears* to be of a different order from the sequence of physical events. In a measure at least it is logical, aesthetic, sentimental, righteous, perhaps even devout. These properties seem to pertain exclusively to a conscious being, and to characterize a certain level of consciousness.

It may be objected, indeed, that the mass of mankind is only imperfectly logical, or moral, or religious. *Homo sapiens* is for

the most part the prey of catchwords. He is neither clear-headed nor clean-handed, and his sense of beauty is a vagrant thing, if it exists at all. This objection has a certain force. We need not suppose that a man is not a man unless he is better than most of us, or that it takes Aristotle or da Vinci or St. Francis to prove that the human spirit may enter regions which the human body can never reach. If mind, in itself, is different from body, then the commonest mental stuff must be different from the dust of which our frames are made, and arguments which have no concern with anything except mind at its highest, are, from this aspect, as good as impotent. There is no need, however, to search the empyrean for a witness. Any one who in any degree admits a duty for duty's sake; any one who, as we say, puts two and two together; any one who responds to the beauty of sky, or forest, or sweet music, brings this testimony with him. He is admitting the canons and the authority of this species of evidence; and the mere admission stamps him for what he is. He is part of a new self-ordering system whose standards are its own and inviolate. He need not lisp in numbers, or in syllogisms, or in the calculus. It is enough if the sounds he utters have a meaning; and if the black marks which he makes upon a white surface have sense and significance. This is the 'logic' which is relevant to the argument and the same holds, *mutatis mutandis*, of his loyalties and of his sense of beauty.

The connexion between the psychical order of regulation and the fact of *consciousness* with which we have this peculiar introspective acquaintance is certainly obscure in many ways. Consciously, we are capable of thought, and reflection, and loyalty. Unconsciously, it is doubtful if we have any such capacity, and even if 'unconscious inference' or 'unconscious purity of heart' are literal descriptions of something that exists, we can scarcely believe that these 'unconscious' capacities could exist in a being

that was for ever and ineradicably unconscious. We should rank such beings among stocks and stones, not among logical or moral creatures; and, with the best will in the world, we cannot comprehend how events of a logical or moral order can be intelligibly supposed to be governed by, or to be simply subordinate to, the sort of influence that we usually believe to be bodily. The proof is very simple. Aristotle, it will be conceded, was a tolerably competent logician, and he held opinions concerning ethics, and poetics, and other such things, which are still of considerable value. He supposed, however, that his brain was a cooling organ, and he attributed to the heart what the doctors of our own day would ascribe to the cortex of the brain. Does any one suppose that if the Stagirite's physiology had been improved, his system of logic would therefore have been better or his ethics improved in consequence? There is no reason why either of them should have been improved; and if Aristotle had known all that there was to know about the brain or about any other part of his body, there would still be no reason.

Philosophers, when they deal with these topics, are accustomed to speak of the unity of self-consciousness; and although many of them point out that there is a certain analogy between the continuity, warmth, interest, and intimacy of the body upon the one hand and of self-conscious mind upon the other, most are strongly of opinion that the unity of self-conscious mind is a unique species of integration, regulating itself in an entirely characteristic fashion. Common sense does not use this language, but it assents to the idea. The plain man, together with his lawyers and his educators, does believe in the existence of his integral psychic personality, governing itself according to psychical principles in a fashion self-accepted and self-imposed, influenced by its body and its physical environment, but free to choose, consent, and act. And he looks to his normal waking conscious-

ness when he thinks of the manner of creature that, in fact, he is. He does not believe, indeed, that he is *nothing* when he is not awake; and so he is prepared to supplement his waking testimony by evidence which concerns his 'sub-' or 'un-' consciousness. In the main, however, he relies upon introspective evidence obtained during his waking hours.

Assuming this general framework of ideas, therefore, we have now to consider the more special lessons of everyday experience concerning the partnership of the mind with its body. The most convenient and, upon the whole, an adequate method of dealing with this question is to consider, firstly, the influence which we suppose our minds have upon our bodies, and secondly the influence which we take our bodies to have upon our minds.

In the plain man's eyes, the clearest instance of the action of mind upon body is to be found in the familiar facts of voluntary movement. He *wants* to raise his arm, to whistle for his dog, or to vault a fence; and in the usual case these actions ensue. Theory apart, we are all entirely convinced that the immediate antecedent of actions such as these is our own intention to perform them; and we believe those psychical intentions to be part of our self-regulating consciousness and to be explicable, without remainder, in terms of what we call our minds. The arm is raised for the purpose of directing traffic or of calling for silence, in a word for something *meant*. And with this we are content. It is possible, no doubt, that we should not be. Only certain of our actions can be controlled in this way, and here only within limits. However much we may want to run faster than our neighbour, it does not at all follow that we can in fact outstrip him. A celebrated athlete, it is true, once discovered his exceptional powers when, as a stripling, he leapt a six-foot hedge with a bull in pursuit. But then he was an exceptional person. In short, our volitions affect our actions only in so far as our bodies

are capable of responding; and we have really *no* clear idea why certain actions of this kind are possible to us and others not. Experience shows us that certain of our movements, in a limited degree, are subject to this regulation; and this is all we know. Within these limits, however, we firmly believe that we do know it. We can leap, and run, and whistle when we choose. When we are tired we can force ourselves to an increased effort for a sufficient purpose. And so forth. These voluntary movements, therefore, furnish the clearest prima facie evidence of the influence of our minds upon our bodies. They do not, however, exhaust this testimony, and so it is necessary to consider other and more complicated instances.

In the first place, the process which we call 'learning by experience', while partly a matter of express volition, attention, and recollection, is also a matter of habit and growth. These habits and this growth are not simply physical. They are mental, too. The student's habit of study, the politician's habits of propaganda, the trained perceptions of a mountaineer, the artist's eye for atmosphere, and any one's eye for distance, shape, and solidity are in a great measure unnoticed and unreflected upon, yet mentally operative and of a mental order. This is a commonplace, and only a part of it is relevant to our present topic. The relevant part, however, is quite peculiarly relevant; for these acquired and habitual (or semi-habitual) indications govern (with varying degrees in their vigilance) the whole of our adaptation to our surroundings. When Mill, thinking of his *Logic*, threaded his way absent-mindedly through the London traffic, he was guided mentally, although his explicit attention was elsewhere; and most of us, in a great part of our activities, are responding to suggestions which we have learnt but do not think of.

Secondly, we are all convinced, firmly if somewhat vaguely, that our mood and temperament and hopes and excitements do

have an effect upon our bodies. Our mouths may water at the mere idea of a feast: rage and excitement may impede our digestion: and, in a thousand ways, processes which, as we know, are not fully or very directly subject to voluntary control, are nevertheless affected by our mental condition. This applies to health and disease. The sense of health and fitness, as every one knows, is very clearly dependent upon our fears and upon our fancies. Imputed ailments have real effects. But there is more than this. Whether tumours as well as warts may be removed by mental suggestion during the excitements of a pilgrimage is a question, perhaps, upon which common sense has no decided opinion. But if it is doubtful about the extreme cases, it is profoundly certain that there is an important and everyday efficacy of this general sort. It is convinced that worry may kill—and that, very often, it hurts; that anxiety affects the quality as well as the quantity of the nourishment which a nursing mother supplies; that a resigned invalid is not so likely to survive as one who struggles tenaciously for his life; perhaps even that many, by relinquishing the will to live, relinquish life itself. There is a high and a swift rate of mortality among those who are irredeemably disgraced; and it does not surprise us to be told that the pilgrim ships returning from Mecca are seldom at sea for many days before large numbers of the faithful die from a very natural cause. They have then nothing finer to live for than the serenity of beholding the sacred city. We believe, then, in these half-controlled, emotional influences. Pallor and tears, fainting and blushing are obvious instances: so are a host of 'functional disorders'; so also hysteria and neuroticism. The details we leave to the doctors, but we suppose ourselves to know the outlines. The very tone and temper of the body, its vigilance and its poise are, in our belief, very largely an effect of the spirit.

Lastly, in this connexion, we may refer to the influence which

the mind has upon its sleeping and its waking. Common sense does not believe that mental existence ceases altogether during sleep, but it certainly supposes that psychical regulation is for the most part in abeyance during that condition, and that the condition, again for the most part, is prevailingly physical. Yet even in this crucial matter the mind (as we all know) has a very effective influence. Insomnia is often due to worry, and when it is a bad habit, it is often a mental habit. Great generals have practised the art of sleeping at need, and the common man can waken early (if not precisely at the time he wants) without artificial summoning if he has to catch an early train. He sleeps later on Sunday mornings because he knows that the factory-whistle will not summon *him*, even if there are shifts for some of his unfortunate fellow-workmen; and if a child is sick he will awake at a moan from the sufferer although trains and thunder and milk-carts may not affect him at all. There are limits to this faculty, to be sure. Napoleon, after the loss of the battle of Aspern, lay in sleep for thirty-six hours, and his staff feared that he was dead. This narcolepsy was Nature's revenge, and it may be doubted whether Napoleon could have controlled it at all. Similarly, we all know men who, after a week's sleepless watching at the bedside of a near relative, simply could not keep awake on the night which they knew to be the most critical of all. Despite these limits, however, the existence and the efficacy of this mental control over its own (and its body's) slumbers seem beyond dispute.

So much, then, for this side of the story. On the other side, the counter-influence of body upon mind is at least equally apparent. As voluntary movement is the most obvious example of the first relation, so sensation is the clearest instance of the second. We look and see a horse; we hear the boom of the guns or the call of the bugle: when we are pricked by a pin, we

see the bleeding and we sense the pain. Plainly the body enters here. The horse, we say, must be there in front of us, if we are to see him, and it is some physical fact, not some state of our minds, which causes us to see the horse and not a rhinoceros, or a cabbage or some other thing. And so with hearing and the other senses. To be sure, our sensations may frequently be mentally conditioned to a degree that we seldom suspect. What we see may depend upon what we expect to see quite as much as upon the stimulus; and when tired soldiers saw the angels at Mons there may possibly have been no physical causes for their visions. In the general case, indeed, much that we take ourselves to perceive outside our bodies may be blended and transformed by memories, fancies, and expectations. On the other hand, *something* 'outside' our own minds is present and operative. There is affection of the sense organs with subsequent effects upon the body, however true it may be that this naked shock of the senses is clothed upon by our busy minds. If it were not so, the blind would see and the deaf would hear.

The more general influence of bodily health and vigour upon mental function is perhaps a little more obscure. While we are agreed upon the advantages of a healthy mind within a healthy body, we are also aware that a healthy and active mind is often the partner of a diseased, deformed, and even of a lethargic frame. What is necessary here is to discriminate. There are only certain diseases and deformities which are noxious to the mind, but the noxious ones may be profoundly so; and the malformations, or the lack of some essential secretion, which have to do with cretinism or other forms of idiocy, have manifestly the very gravest mental effects. Sleep, again, as we have seen, is very largely a thing of physical conditions; and these, quite obviously, have mental effects. So also fatigue, lassitude, and malaise. We may not always be aware of our fatigue; but

unawares we are far from alert; and the tale of mishaps and of breakages mounts up in consequence. Moreover, it is the commonest thing in the world to say that we are 'not ourselves' when our bodies, so to say, ring differently to us from their normal resonance, and a profound change in the 'vital sense' (or coenaesthesis) has led many to speak of their former selves as 'the other fellow' who disappeared after a battle, or fire, or earthquake.

We are also aware that drugs and anaesthetics and the toxic concomitants of fevers have the profoundest effects upon our minds. In chloralism there is a weakening of memory and of attention. With morphinism is associated excitability, the rapid passage to psychic contrasts, weeping, laughter, irascibility, dramatic poses, and moroseness. Epilepsy induces querulousness, together with hallucinatory smells of sulphur, phosphorus, or corpses, and auditory hallucinations of firearms, buzzings, confused tumult and shouting, or threatening and condemnatory voices from heaven. Alcoholism and lead-poisoning lead to psychic exaltation and to mental dissociation as well as to incoordination of the limbs or of the tongue; and every one has heard of the drunkard's snakes and rats.

Summing up, therefore, we may say that our ordinary knowledge and experience comprise a rough but comparatively articulated acquaintance with the sort of effect which our bodies have in detail upon our minds; and conversely. What is more, there would be relatively little difference of opinion if body and mind could be regarded always as going concerns. It is evident, however, that this is precisely what cannot always be assumed. When body and mind, so to say, are both at work, we are seldom inclined to believe in any one-sided dependence. On the contrary, we allocate distinctive functions to each of them. From certain other standpoints, however (quite familiar to all of us), we are inclined to be doubtful; and our doubts, very often, may lead

us to regard the body as overwhelmingly the predominant partner. In any ordinary sense the body is a going concern so long as it is alive, and the mind may seem in comparison intermittent and dependent. It is at the mercy of a shrewd blow or of a puff of vapour. It may be drugged into nothingness; and, so far as empirical evidence goes, it seems to cease altogether when the life of the body is extinct. Again, we have doubts when we consider the history of the body and the evolution of its species. When does the mind begin to be a going concern? Is it at birth, or at the moment of quickening, or earlier? And if it has evolved from protoplasm and this from something still more rudimentary, at what stage in this evolutionary process may the mind, properly speaking, be supposed to set itself a-going? We can see no reason, it is true, why a thinking being should be a biped or erect in stature, but we may reasonably doubt whether beetles or potatoes could ever attain any logical or ethical self-regulation. Life, in a word, need not be mind, or even possess its rudiments. Yet mind seems to have emerged from life at a certain stage—and to be beholden to a certain variety of life. If so, it may well appear to be dependent.

These are serious objections, and they indicate, in some measure, the intricacy and perplexity of the whole problem. The mere statement of them, however, seems to remove one manufactured difficulty. According to certain philosophers the current opinion upon these subjects accepts some sort of monstrous combination of a ghost and a corpse. This is a travesty of popular beliefs. The body which, despite our dubieties, we commonly suppose to be the partner of our minds, is a living body, not a dead one, or a mere machine; and our minds, despite our vacillations, are not, in our opinion, ghosts at all.

II

The Evidence of the Sciences

THE sciences, as we have seen, usually set out from a basis of fundamental agreement with the body of common-sense opinion, and endeavour to deepen and to purify it. This process of refining and of strengthening, however, may lead to very unexpected consequences, and a highly developed science may come to present a strange esoteric doctrine, altering very profoundly the provisional assumptions of its origin. In general, scientific ideas are sometimes in a condition of ferment, sometimes in equilibrium. In the former condition it is frequently very hard to discover what precisely they are, or what their relation is to anything.

Something of the sort is happening to-day in the sciences which most nearly affect this inquiry. The studies most closely related to the mind-body problem are psychology on the one hand, and physiology on the other. At the close of last century we might have said, with great confidence, that each of these proceeded within the ambit of common-sense dualism. Psychology was based upon introspective evidence; physiology dealt with a material bodily system. For the former, mind was a thing of desires, and will, and intelligence. Moreover, it was fundamentally conscious. The latter may have hoped some day to include conscious phenomena within a materialistic philosophy of all Nature. In the main, however, it was content to accept both mind and matter, and to ask whether they were parallel or interacting. The nature both of mind and of matter was supposed to be pretty obvious.

To-day there is a change. It may be doubtful, indeed, how far the revolutionary ideas of modern physics and the altered

aspect of new-fangled materialism have directly affected physiological theory, or, for that matter, physiological policy; and even the more departmental quarrel between 'vitalistic' and 'mechanistic' biologies may have had a comparatively small influence upon detailed research in physiology. Nevertheless, there is an alteration in standpoint. Armed at a pinch with some conception of 'activism' (or perhaps untroubled about their weapons or their armour), physiologists are prepared to regard body and nerves and mind as a single functional system, graded and hierarchical, but without broad ditches or very troublesome gaps.

The psychologists have met them at least half-way. The movement called 'behaviourism', it is true, is too wilful and dogmatic to be likely to keep its place among sober contentions. In its most plausible form it asserts that those responses of the organism which are of the type that may be accompanied by consciousness are what is meant by 'behaviour'; that this 'behaviour' is in fact the whole system of events which psychologists have to study; and that introspection is a negligible and discredited witness concerning it while galvanometers, plethysmographs, and other laboratory appliances are verifiable by a multitude of observers. Just as we can study a dog's behaviour without consulting the dog about it, so we should and could study human behaviour without consulting the people who behave. We should leave it to our instruments to decide. A man is fatigued if his output diminishes, and it is irrelevant whether he feels tired or not. He is bored if his attention vacillates, and it is irrelevant whether or not he politely informs you that he is vastly enjoying your very interesting little talk.

Such 'behaviourism', it is evident, is merely special pleading. The experience of weariness may be connected with diminution of output, and it may sometimes be inferred by other people

when the wearied person will not admit his lassitude. It is *not* the same thing, however, and it *is* something. 'Behaviour', in short, either means something more than the movements, blood pressure, or secretions which can be observed and measured by other people, or else it is not enough for psychology.

Many modern psychologists, however, without committing themselves to the extravagances of 'behaviourism', contrive to evade (to their own satisfaction) the cutting edge of those perplexities concerning the mind and its body which seemed so urgent at an earlier era. Without denying the existence, or, in a measure, the importance and the singularity of introspective evidence, they allege, firstly, that it has been explored to the full and found wanting; secondly, that it has been explored by philosophers, and poets, and novelists, and other untrustworthy people; thirdly, that the 'consciousness' which has been explored in this fashion is a 'function' and quite unsubstantial, having consequently to be regarded as a function *of the body*, not as an effective contributor to a mind-body partnership; and lastly, that even if consciousness were, as in fact it is not, a highly reliable witness concerning its own phenomena, it is, in the last analysis, a feature only of a wider and profounder system of events, partly nervous and organic, partly 'unconscious' or 'subconscious'.

These statements, to be sure, are not entirely novel, but the emphasis upon them is new, and there is greater novelty still in the attempt to employ these conceptions, not as subsidiary, but as the primary clue to the essence of psychological study. In its stridency and in its atmosphere, at least, if not altogether in its logic, this *volte face* on the part of psychological inquiry ought certainly to affect our problem, and it is appropriate to begin this chapter by considering whither these arguments lead us. In the second part of the chapter we shall briefly review the physiological situation.

A. *The Psychological Aspect*

Modern psychology may claim, not unfairly, that it has a firmer sense of the biological and evolutionary realities of the psychological situation than many of the older theories possessed. It also claims that recent researches into psycho-therapeutics and into the domain of the 'unconscious' have supplied it with more adequate categories. These various arguments, it is true, are often so closely allied as scarcely to be distinguished. There is synergism in all their ramifications, the same arguments receiving at one time a biological and at another a psychological emphasis, and the conclusion is always that even a provisional dualism is *démodé* for entirely sufficient reasons. Nevertheless, we must try to discriminate between the different steps and stages in these converging arguments.

The trend of recent discussions concerning our instincts and our emotions is a good introduction to this topic. By an instinct, in popular language, we mean some characteristic train of behaviour which seems to be part of the nature of an animal species. The prowling of the fox, the pontifical efforts of beavers, the flight of the hare and the pursuit of the hounds are instincts in this sense. These are racial habits which, although they may be improved by practice and made more wary through individual experience, do not need to be learnt, and, if they are prophetic, do not have the sort of foresight that comes from reflection or memory.

We recognize these instincts in our fellow animals, and we also recognize in them impulses and appetites of the same general order. We are also accustomed to suppose that the higher animals have a certain type of consciousness associated with, and in part determining, this instinctive, impulsive, or appetitive behaviour. The crouching cat and the nesting rook have all the marks of alertness, attention, and emotional excitement in their behaviour.

Very few human observers have doubted these facts, or these interpretations, at any time; but various reasons, and very likely a certain prejudice, have made many human observers very reluctant to rank themselves with their fellow animals in this affair. No one could deny, indeed, that he has certain instincts, as well as a great many impulses and appetites. Even a moralist as devout and as rationalistic as Bishop Butler laid stress upon the circumstance; but Bishop Butler, and many preceding and succeeding generations of interpreters, maintained that (whatever may be true of the animals) human beings at least were seldom *simply* creatures of instinct, impulse, and appetite. In their view, man is accustomed to regulate his conduct with a certain intuition, circumspection, and foresight.

In its essence this opinion is still sustainable without dogma, or prejudice, or conceit. The moderns, however, are disposed to flout it and to maintain that our lives are built up of instinct and impulse, although these are capable of profound sublimations and of elaborate education. The emphasis, in other words, is laid upon a certain native deployment of tendencies, 'urges' and tendencious patterns which are the human ways of responding to a situation, just as diving is a moorhen's way, or expeditions to the ocean an eel's. This instinctive response is bodily, passionate and profound; and it may be regarded either psychologically or biologically. From the biological standpoint it is a pattern of movement and of corporeal organization, subtly adapted to an alterable environment, but part of the intricate process whereby a living organism selects what it needs and sustains itself and its kind. Psychologically, it is a felt striving and an experienced attitude, suffused with emotion, but also impregnated with a vitality that is experienced as the body's.

If we interpreted these questions dualistically, we should say (as certain contemporary psychologists still assert, although

unfashionably) that the essential factor in these affairs is the existence of an elaborate bodily 'mechanism' which responds to its mental cue as a piece of ordnance does to a very light pull of its trigger, and leads to prolonged adaptations in the major 'instincts', as well as to shorter ones in other impulses. This, if it were true, would explain the facts; and it is always a possible theory, since the patterns of response, here described as 'mechanisms', do actually exist. Psychologists who are biologically minded, however, object to all such descriptions. This idea of an intelligent series on the one hand, and of a 'mechanical' set of explosions upon the other, is, in their view, the proclaiming of a cleft which does not exist. Ultimately, indeed, the whole of our living may be 'mechanical'. It is a biological question whether it is or is not; but the intrusion of a sharp antithesis between mechanical and psychical at this stage of the argument is, they think, quite unwarranted. These conscious experiences, in their view, are not inserted into an alien if responsive machinery. They are part of the same total adaptation and similar to the rest of it.

A psychological answer to this contention does not seem to be very difficult. If the whole range of the mind as we find it in our experience—duty and artistry and science and politics—could be shown to be a particular consequence of the general principles which govern the behaviour of amoebae and monopods, the biologists, quite manifestly, would have established their contention. If not, there *is* a critical difference which may be either gradual or abrupt, but, in the end, is inescapable. 'Modern' psychology, however, is, for the most part, uninterested in this question, and those contemporary psychologists who (without being behaviourists) refuse to believe in the doctrine of 'intelligent' process allied with a vast 'machinery' of bodily expression, elect to adopt a neutral course. Instincts, they say,

are, or at least may be, conscious. They are felt with passion and enacted sensitively and not quite blindly. Therefore, they are not simply the biologist's concern; and in their further development they manifestly overpass the boundaries of his chosen province. They are a kind of psychical regulation, although a sub-rational, animal kind. And there the matter is left, in a dualism intentionally fluid and profoundly non-committal.

Dr. McDougall of Harvard, for example, in his most recent account of these instincts, maintains that the core of any instinct is some peculiar passion, and that instinctive action is any one of the outlets which the passion may take. Thus fear may express itself in flight, or in immobility, or in the valour of a fugitive at bay. If so, it is not at all clear why he should *also* include 'instincts' of pugnacity or of escape. For these are not peculiar passions. And again, it is not at all clear why, in his opinion, slander or ringing up the police or investing money under an assumed name or any other cowardly or prudent expedient should not be regarded as 'instinctive' also. Dr. McDougall's contention, however, is at least an interesting indication of the connexion between instinct and emotion in modern psychological theory; and the fact of the connexion is abundantly evident from many sources. We owe most on this subject to Charles Darwin's work on *The Expression of the Emotions*; and William James's theory, which (like Lange's) maintained that emotions owe their peculiar quality to, and indeed *are*, the organic sensations which are aroused (in the usual case) by the perception of certain objects (so that we are sorry *because* we weep), was possible, in his own view, precisely because our bodies have so many instinctive expressions that they form huge sounding-boards capable of the whole gamut of resonance which we find in the passions of the human mind.

There are few who go the whole way with William James. As

against the straightforward sense of his words, it is plain that we may weep for joy and mourn when our eyes are dry; and from the bodily end, the balance of the evidence, as Sherrington or Cannon has proved, conclusively shows that emotion is primarily cerebral, not a secondary repercussion from the viscera. It is undeniable, however, that much in the quality of our emotions is not pure mental 'shock', but is shock conjoined with mutterings from the skin and from the intestines. This is especially so in fear and lust and hate. We do not need to cite the instincts in favour of this observation. It is much more general. The truth is that *every* mental event has widespread bodily effects. The bodily effects which are apparent to ordinary experience in voluntary movement or in a blush can be detected on a much ampler scale by instruments more delicate than unaided self-observation. Even a stop-watch can teach us much that we do not suspect. In a word this influence of the mind upon its body (if the expression be pardoned) is an inevitable thing, not peculiar or occasional.

The evidence derived from psycho-therapeutics does not, of course, stand by itself. Just as the healing of the body calls upon all the sciences which have to do with the body and upon others besides, so the healing of the mind calls for a knowledge of all the sciences which have a bearing upon psychology. The art of healing by methods which deal with the mind, however, is peculiarly concerned with the mind-body problem, since the aim of the art is to heal the patient, organism and soul together. If the experiments in this art, therefore, supplied evidence of a certain relation between mind and body, we should thereby attain a direct answer to our present questions.

As we have seen, common sense is convinced that our mental attitude may affect our bodily health, not merely indirectly by counselling a prudent regimen, but directly also. In all ages, therefore, physicians, and priests, and friends, have attempted to

coax the invalid into cheerfulness, or to scold him into resolution. Moreover, we practice these same methods upon ourselves; and we have even an amazing faculty of deluding ourselves against our better knowledge through our ardent longing for the fruits of optimism. Mental therapy has been practised, therefore, even in materialistic ages. Writing in 1848, a Scottish physiologist declared that 'the emotions of hope and joy promote the capillary circulation in the surface of the body, and thus render the body capable of withstanding the causes which excite disease and of resisting it when once formed'.

What is claimed in modern psycho-therapeutics is that the doctors, by the skilled use of suasion, suggestion, hypnotism, and psycho-analysis, have been able to substitute a verifiable, if provisional, science in place of rumour, credulity, and superstition. By taking psycho-therapeutics patiently and seriously, they have solidified our knowledge of this subject, making a part of it firm and the rest full of hope. Alienism, or the study of insanity, instead of being regarded as either loathsome or diabolic, is beginning to be studied as a natural science whose principles can be understood. Even more important is the study of those disorders which are not madness, but, as we say, 'nerves' and 'nervous breakdowns'; and principally the study of these in their incipient stages. As Freud has told us in the memorable title of one of his books, there is, in truth, a 'psycho-pathology of everyday life'; and the cure for it is a mental physic acting upon an unbalanced mind-system. This is what should have been expected, although we may have taken a long time to find it out. For scientific purposes the marginal or borderline cases are usually the most instructive.

We have all heard of hysteria, and have read of some 'dancing mania' in the Middle Ages, or of the 'witch's claw' and other insensitive patches on the bodies of those poor creatures. Again,

in our own war-swept age we have been familiar with hysterical mutisms and the other abnormalities connected with 'shell-shock'. In such cases, as we know very well, there is a quite peculiar intimacy of mind and body as those are currently regarded, since there are obvious physical effects of what seems to be a mental cause. The 'stigmata' of the cross and the nails may even have shown themselves upon the bodies of the saints —this point is doubtful—and 'psychic' tumours or false pregnancies have deceived skilled observers.

What the doctors learned (and before the war) is often quite sober and definite. If we consult, for example, such a book as M. Pierre Janet's *The Mental State of Hystericals* (which appeared in 1901), we find full and clear accounts of the clinical phenomena. These insensitive (or anaesthetic) patches are not matter of hearsay or subject to the objection that more careful inquiry might have revealed an anatomical lesion. They may be *shown* to depend, quite plainly, upon the patient's *ideas*. As M. Janet says: 'It is not the region innervated by the cubital or the median nerve that is anaesthetic—it is the hand or the wrist' (pp. 9–10). In genuine paralysis the anaesthesia could be found on the muscles of the forearm; yet these, in such hysterical cases, are not anaesthetic. Hysterical contraction of the visual field, again, depends upon what the patient takes his eyes to be and to do, not upon what a physician knows to be true of their anatomy. The same is true of hysterical contractures. The patient's leg may lie relaxed on the bed, yet when the doctor touches it, or the patient attempts to move it, there is an instantaneous and most obstinate contraction. Nevertheless the mind may undo the contracture. 'Sometimes the fixed idea is conscious, and it is necessary to deceive the subject in order to stop the phemomena. Lucy had a spasm of the jaws for which we could do nothing. Some one told her to put out her tongue at us when we should

enter. The notion amused her, and we found her forgetting to keep her mouth shut, and putting out her tongue at us.' And similarly of aboulia, or lack of 'will power'. 'When I want to sing', a patient called Maria declared, 'I find it impossible, and yet at times, listening to myself, feeling my lips move, I think that I sing such and such a song very well. . . . Surely it is not I that am walking: I am like a balloon turning around all alone' (p. 147).

Most accounts of hysteria dip freely into 'the sub-conscious'; and to this we must proceed. In passing, however, we may refer to certain other corroborations of the common-sense position which presuppose nothing other than 'consciousness' in the ordinary sense. It is still debateable how far faith-healing is scientifically attested, but many physicians are prepared to accept the statement that *any* 'cure' for tuberculosis which is not positively harmful will produce good results as long as belief in it is fashionable—and no longer. It is an empirical fact, again, that many 'asthmas' and many hyperthyroidisms are emotional in their origin at least. The tale of the man who struggling for breath crashed his fist through the glass and inhaled great draughts of air only to find in the morning that it was the face of the clock, not the window-pane, that he had broken, is no fiction; and it is not unusual to class exophthalmic goitre among 'neuroses', which *may* be a matter of purely physical 'nerves', but *seem*, at least, to be very frequently psychical.

Again, there have been interesting and important discoveries concerning the effect of (prima facie) mental disturbances upon what is called the 'sympathetic' nervous system. The increased flow of saliva when our 'mouths water' at the thought of a feast is not at all illusory. Pavlov's experiments with the 'sham' or 'psychic' feeding of his dogs gave measured and attested evidence. Sham feeding also increases the flow of gastric juice, and there

can be no doubt that the pleasures of the table have an effect upon nutrition as real, in its own way, as the chemistry of proteins, fats, and carbohydrates. The effects of emotion are still more striking. Stagnation of digestion has been found to occur as late as twelve hours after some period of excitement. Fear may cause constipation, or, for other reasons, its opposite. This accords with common knowledge, but there have been important discoveries beyond the range of this current opinion. As Mr. Cannon and others have proved, there is an increased production of adrenalin when a cat is alarmed by a dog, and this increased discharge of adrenalin into the blood in fear, rage, and pain, is accompanied by the release of glycogen from the liver. Both the sugar and the adrenalin strengthen and revive muscular action. They are released promptly in strong emotions and fortify the muscular effort which the emotion arouses. Accordingly they have a biological purpose, but the phenomenon, directly, seems to be a bio-chemical effect of mental process, and the process may be very psychical indeed. In experiments among medical students it was found that a hard set of examination questions caused an abnormal release of glycogen in four-fifths of the cases. An easy one had a negligible effect of the kind.[1]

Persuasion, suggestion, and auto-suggestion, like faith and prestige, may appeal, and usually do appeal, to our conscious waking selves. They may be strongest, indeed, when the mind has relaxed its critical vigilance, and is free from the state of tension that we call the will. Hence the 'law of reversed effort' of the New Nancy school, and the glad impersonal confidence of faith's surrender. These processes, however, being normally sub-rational and of a low potential in point of volition, are supposed, on this account, to show affinities to 'sub-consciousness'; and the abnormal suggestibility of hypnotized persons supports

[1] Cannon, *American Journal of Psychology*, vol. xxv.

this contention. It is usually contended that the process of hypnotism, in hysterical or normal subjects, 'taps' a deeper layer of mental process than the surface level which alone is normally accessible to the waking consciousness. A subliminal mentality, according to most accounts, is laid bare; and this, on the usual theory, is taken to be the profoundest part of the executive whereby the mind controls its body.

It may be doubted whether this hypothesis is inevitable. The mentality of hypnotized persons is certainly peculiar. Through suggestion they may be sensitive (indeed hypersensitive) to all the objects on a table except, say, to the ivory ones, or to the voice of a single person only, amid a general babble of conversation. A suggestion accepted during hypnosis may appear as an inexplicable impulse when the trance has disappeared, and yet the subject, re-hypnotized, may assert his continuous subconscious recollection of the suggestion. In this latter case, indeed, it may be objected that the 'subconscious' continuance of the memory is itself the product of suggestion; and it seems *possible*, at least, that all the phenomena can be explained upon the principle of Philip drunk and Philip sober, or of the experiment in Wilkie Collins's *The Moonstone*. Philip may have to be drunk again in order to remember what he did with the parcel when he was drunk before, and the original surroundings may have to be repeated before the tobaccoless somnambulist who mislaid the jewel is able to do it again in his sleep. There is no conclusive evidence, here, that hypnotic phenomena need a different explanation, but they *may* be interpreted on other lines; and, on either hypothesis, the evidence for 'subconsciousness' has important consequences for the mind-body problem.

Even on the most conservative interpretation we have to maintain (1) that much of our consciousness is 'marginal' and elusive, very hard to observe introspectively and commonly not

so observed even if, in a sense, it is felt; (2) that this 'marginal' consciousness is operative in a thousand ways; (3) that the tendencies and the dispositions which we take to be part of our minds are, for the most part, reported only intermittently to our consciousness. These results, as we saw, agree with common sense; but modern psychology in exploring these regions has certainly enormously extended the vague range of conjecture that the plain man is disposed to allow himself; and if the present fashion in these affairs is rather enthusiastic than critical, it is not at all unlikely that this enthusiasm may be more instructive than a resolute and invincible caution. For common sense, it is true, all these fugitive admonitions of our 'subconsciousness', and all this 'implicit' regulation, are of the same order as explicit attention and self-government, and are capable of responding, not inadequately, to the interrogations of the waking self. So much in this contention is profoundly allied to what we mean by self-respect and to what we believe ourselves to be, that any profound alteration of our perspective in these matters calls for the most stringent examination. It cannot be simply a curious academic question if the ape or the deity subconsciously within us is more truly ourselves than the waking, attentive, 'responsible' ego which is what most of us think of when we call ourselves 'I'. Yet if we were convinced of something much less than this, and had to admit that our selective, conscious attention relegates nine-tenths of our behaviour to mere hints of a subconscious kind, we should have to modify, not the foundation of the current opinion, but the greater part of our usual beliefs concerning the mind's mode of working. Our attentive consciousness, we should say, deals with the things which, at the time, seem best worth our attention. The rest is left to a profoundly inattentive regulation which is seldom ostensibly 'conscious', although usually it may become so when sufficiently crucial. In this there is no con-

tradiction. Unconscious 'ideas', or 'wishes', or 'intentions' certainly *appear* self-contradictory, and must at least be defined with great nicety if they are to become intelligible. Unconscious regulation of movement and secretion and behaviour is not at all contradictory, and may very often be the truth.

A fugitive, semi-cognizant, inattentive, marginal subconsciousness must, therefore, be admitted to exist; and it may have important consequences for the mind-body problem. Whether it *must* have those consequences is another question. The existence of a vague hinterland where mind and body meet, if there is such a hinterland, explains nothing at all. It is an unfortunate, if inevitable, complication of the problem—a chastening reflection, not a solution of anything. If the fringes of mind and of body are both unknown it does not follow that this cloud of unknowing removes the perplexities attending either of them. Ignorance and dissolving vistas may appear to make speculation freer, but cannot in reality do so. It would be otherwise, indeed, if 'The Unconscious' of the psycho-analysts were a proven and intelligible thing; but this is just what it is not. This Viennese monster remains oracular. As we have seen, 'subconsciousness', in certain senses at least, must plainly be admitted to exist, but 'the unconscious' need not be admitted at all. This 'unconscious' is alleged to be that which cannot be known by introspection or by retrospection, yet it *is* recovered by these very processes after prolonged psycho-analysis. It is alleged, again, to have all the characteristics of consciousness except the trivial property of being conscious; and in the next breath we are told that it is characteristically *different* from consciousness, being profoundly irrational in its own characteristic fashion, pursuing the 'pleasure principle' instead of the 'reality principle', showing a violent contrast in its 'latent content' to the 'manifest content' misreported, as in a bad play, in our consciousness. In

short, a palpable contradiction in detail is superadded to the original contradiction of the idea.

This need not be believed; and if it were believed it could not throw light upon the mind-body problem. Many would claim, however, that an infant science like the study of the psycho-neuroses, may be 'warm' in its guess-work, although retaining something of the incoherence of extreme youth. 'The Unconscious', if not, properly speaking, a significant conception, may at least be a name for certain important facts and processes. All that may be meant is that 'psycho-neurosis depends essentially upon the abnormal activity of processes which do not ordinarily enter into consciousness', and yet have unmistakeable analogies to conscious process. The neurosis itself is a conflict in adaptation, and occurs when our customary psychical adaptation to our social and moral environment meets, without knowing why or how, with the independent development of an unassimilable, primitive, semi-mental system of response.

The statement quoted above is made on page 5 of the late Dr. Rivers's *Instinct and the Unconscious*, and is part of a psycho-biological theory. The researches of Dr. Head and his colleagues, it is claimed, have shown the existence of two distinct kinds of sensibility in the afferent nervous system. These are, respectively, the crude primitive 'protopathic' system, and the later, more complex and more delicate 'epicritic' system. Normally these are fused into at least a working hierarchy, but the protopathic may be unduly repressed or may persist in a development which, appropriate to a complete protopathic system, disturbs co-ordination in a being that is also epicritic. Psycho-neurosis repeats the story at a higher level Here, our instincts correspond to the protopathic system; and the accepted requirements of social life to the epicritic. Thus instinctive life is part of our mental constitution. We should retain it in part and suppress

it in part, just as a frog retains in part and suppresses in part the habits of response which are appropriate to a tadpole. 'It is essential to the comfort, if not to the existence of the frog that it shall not be disturbed by the memories of its experiences as a tadpole, and it is convenient, if not necessary, that these memories should be suppressed.' Sometimes, however, the instinctive part of us persists and even develops in ways we do not wot of; and then there is psycho-neurosis.

It is evident that this ingenious theory has its own crop of difficulties. If epicritic and protopathic are truly opposed, it is unlikely that the former should have been developed from the latter. Far more probably both spring from a common root, and are integrated diversely. The same would hold at a higher level. 'Instincts', as we find them in our experience, do not seem to have the opposition to social adaptation that is here claimed for them. If the theory were true, they would be far more 'unconscious', and far less assimilable, than they seem to be. Still, the theory, even if it needs modification, is attractive; and Rivers's treatment of hysteria indicates, in an instructive way, its adaptability to the mind-body problem. Hysteria, in peace time, is mainly to be found among young women; in war among the soldiery. Both have to face their mortal risk; and 'the symptoms of hysteria are due to the substitution, in an imperfect form, of an ancient instinctive reaction in place of other forms of reaction to danger' (p. 135). Mutism, which is so common in shell-shock, may be regarded, on the battlefield, as part of the silence and immobility by which certain animals seek to avoid a peril. It is the stifling of the gregarious warning cry. After the battle it is a protection against further participation in combat, unconsciously utilized. The same explanation holds of contractures, paralyses, and anaesthesias which are, or are connected with, this unintended, instinctive immobility instinct.

This explanation, even if it seems surprising, is at least upon lines which are easy to accept in slighter disorders. The following account of habit-limping, for example, is readily believed: 'The vicious posture and abnormal gait which have become a habit created by fear of pain are really the principal phenomena which cause or maintain the pain.'[1]

B. *From the Bodily Side*

The arrested development of the body in various types of mental deficiency, and the correspondence between certain physical stigmata of degeneracy and the mind and character, are too manifest to be denied or to have escaped the attention of science. There is a microcephalic or idiot skull. A V-shaped palate, the absence of dentary over-riding, cranio-sclerosis or condensation of the bone of the skull are associated with feeble-mindedness in a high percentage of cases. So also are anomalies of the lower jaw (such as progenism), perhaps even prominence of the ears, not to speak of *haematoma auris* or 'insane ear'. Criminologists, as well as alienists, have attempted to classify and to co-ordinate these correspondences. 'In general', according to Lombroso, 'born criminals have projecting ears, thick hair, a thin beard, projecting frontal eminences, enormous jaws, a square and projecting chin, large cheek-bones, and frequent gesticulations.' This is at least somewhat more precise than the usual common-sense physiognomy of sensual lips, brutal foreheads, or cunning eyes; and although it is still unscientific to talk of a 'criminal type', there is yet a certain importance in these generalizations. There is also some interest when a reason can be given for them. Nothing at first sight could seem more irrelevant to intellect or to moral character than the shape of the external ear. Yet if it is true that the ear is one of our organs

[1] Roussy and Lhermitte, *Psychoneuroses of War*, p. 51.

which is undergoing retrogressive dissolution,[1] this apparently whimsical jest of Nature's may be seen to have a certain significance.

Neither the frame nor the skull, however, is more than an indication of the most vital connexion between body and mind. The 'seat of the soul', in the old phrase, seems without doubt to be the brain. This knowledge we owe to science, not to common observation or to the light of nature; and we have now to consider what this knowledge portends.

According to Dr. J. S. Clouston in his *Hygiene of Mind*, '"No brain, no mind" must be an unquestioned axiom to the student and practitioner of mental hygiene'; and Dr. Clouston goes on to comment upon the discrepancy between the 'axiom' and a certain 'uneducated human instinct', together with 'metaphysical and religious assumptions'. Since on a later page, however, he also informs us that 'mind and brain form a dualism; and both require to be taken into account equally in our system of education and in our modes of life', it may perhaps be a question what this 'axiom' commits him to.

'Axiom' there is none. This principle, that is to say, is not self-evident. Instead, it is the result of sifted experience and of careful experiment. The principle, however, need not be the less firm on this account, and it is best to consider the evidence on which its authenticity depends.

In the first place, the human brain is proportionately far larger and more developed than the brain of any other animal. As early as the sixteenth century, Vesalius observed that a man's brain is found to be bigger than that of three oxen, and that the proportionate size of the brain varied, in other species, with the degree of intelligence found. This, in itself, is suggestive, although very far from conclusive. Although the late Anatole France was

[1] Havelock Ellis, *The Criminal*, p. 76.

a tall man and fairly solidly built, his brain weighed only 1017 grammes, or 400 grammes less than that of a Frenchman of average size. Still there is something in these contentions, and the proof from comparative anatomy is strengthened by researches into human embryology, such as those of Professor Elliot Smith and his pupils. Thus in the third week of development the human fore-brain closely resembles a fish's. The corpus callosum, which is the chief commissure uniting the cerebral hemispheres, appears in the true mammals, but not in the marsupials, and is greatest in man. In short, this type of argument is readily extended to detail, and need not remain a mere suggestive generality.

Secondly, decerebrate 'preparations' (or animals whose cerebral hemispheres have been destroyed or severed from the rest of the organism), show a corresponding absence of the reactions which we associate with consciousness. A decerebrate snake winds itself round a red-hot poker until it is charred in death. This proves that the decerebrate animal, if it is conscious, is at least not very sensible. It might be compared, however, to the actions of the man who feels an irresistible impulse to throw himself down from a height—or to any one suffering from vertigo. The man also is not very sensible; but he is conscious; and the fact that certain decerebrate animals do show apparently purposive movements, like the brainless frog neatly wiping acid from his skin, is so much contrary evidence. It may plausibly be argued, however, that in a lowly animal like the frog the brain has not the same difference from the rest of the nervous system as in a higher animal, and that it is at least immensely likely that the cerebral hemispheres in the higher animals are specialized to conscious function. This seems to be the conclusion from the rare instances in which human beings have been born brainless, and yet have continued to live. Of a child who lived for four years in this condition, it is recorded that the child 'never showed any recogni-

tion of its mother, and lay for the most part in a somnolent condition without movement, the arms and legs showing also a condition of contracture. No cutaneous or general sensibility could be detected.' [1]

Thirdly, electrical stimuli applied to the motor area of the cortex of the hemispheres in chimpanzees, orang-utans, and gorillas yield determinate responses, some of which are of the type we associate with voluntary action. In view of the extraordinary complexity of the nervous system, the evidence obtained, under narcosis, from this source, is said to be surprisingly satisfactory (e. g. by Sherrington).

If these reasons remained merely general they would certainly not be conclusive; and in a certain sense it remains doubtful what precisely is proved by them. If any one were to maintain to-day, as so many schoolmen declared, that the mind informs the whole organism, being *totum in toto ac totum in qualibet parte*, he could not be effectually routed even by the entire panoply of modern physiological discovery. On the other hand, he would be forced to admit that an essential condition of this 'informing' is the integrity of the cerebral hemispheres; that defect or disease in them, even if relatively slight, brings pronounced mental defects, although other bodily diseases (in themselves far more serious) do not produce any important or direct mental disturbance; and that, even if certain specific mental processes have no specific correlates in the brain, they are connected more generally with the brain in such a fashion that they do not occur at all if the brain's action is impaired in certain determinate ways. This is because of physiological discoveries concerning the function of the nerves in the economy of the organism, and the place of the brain, and of its parts, in the nervous system. Such discoveries are matter of science, not of common sense. Post-mortem

[1] Howell, *Text Book of Physiology*, p 192.

lesions and the staining of nerve tracts are beyond the range of common observation and inference. Indeed, the word 'nerve' itself is the *neuron* of the Greeks, and a neuron, for them, meant a tendon or a sinew. The tracking of these nerves and the exploration of their functions in detail has given us a body of knowledge, immensely increased during the last century and continuously growing, which, in its principal outlines, must now be admitted to be impregnable.

Our nerves have many functions, being concerned with nourishment, tone, and secretion, as well as with muscular response. Fibres detached from their nerve cells die. The nerves, indeed, are part of the master system by which the organism adapts itself to alterations in itself and in its environment. They are the principal regulators, in ourselves, of breathing and of the circulation of the blood as well as of locomotion or sensory response.

This regulation implies a nervous system; and nervous systems of a simple kind are found even in sea-anemones or in jelly-fish. In vertebrates, and particularly in man, this system is enormously complex.

The rudiments of a nervous system imply, firstly, an end-organ, more or less specialized, which stimulates a twig or dendrite of the nervous unit or 'neurone'; secondly, conduction within the neurone; and thirdly, reaction from the conducted impulse upon some muscle or gland. A receiving and a reacting neurone, jointed at a synapse, form the simplest pattern of an excito-motor arc, or simplified reflex. The receiving end-organ is usually called a receptor, the end-organ acted upon an effector. The nervous conduction, therefore, passes from receptor to effector. Having excited the receiving portion of the arc it must be propagated through it. Mechanical, thermal, galvanic, or chemical action upon the nerve stimulates it. The conduction of nervous

impulse is probably similar to molecular vibration, and there is little evidence of chemical changes. The rate of conduction is relatively slow. In man it is about 120 metres per second—comparable to sound, in fact, not to light or electricity.

The receptive end-organs are usually classified as extero-ceptive, entero-ceptive, and proprio-ceptive receptors. The rods and cones of the eye, or the taste-buds in the mucous membrane of the tongue and palate, are examples of the first; the influence of heart and viscera illustrates the second; and stimulation from joints, muscles, or tendons the third. Impulses received from any of these sources must find an outlet in their action upon some effector. This action, however, may be delayed, and in a complex nervous system may, so to say, be switched on to a variety of effective lines of discharge. Rhythm, timing, and the alternation of muscular movements in walking, say, show the importance of temporal co-ordination; and the needs of the organism decree, on occasion, an alternative response to stimulation. It is customary, indeed, to liken a complicated nervous system to a vast telephone exchange in which calls may be 'put through' to any requested terminus. This analogy is imperfect, like all analogies. In this nervous exchange, for example, it is possible to speak to more than one subscriber at once; and it has its own kind of 'wrong numbers'. In a rough fashion, however, there is an instructive similitude.

An exchange which, as in mankind, has so many and such varied callers, and, again, such a variety of effectors, manifestly needs an elaborate and highly unified central system. In mankind, and among his better developed cousins in fur and feathers, there are principally two such systems, the central nervous system proceeding through the spinal cord, and the autonomic system. Impulses passing through both these systems may reach the brain. Of these systems, the first has hitherto received the closer atten-

tion, although our knowledge of the second is rapidly increasing of very recent years. We may therefore begin with the first.

When change in a receptor initiates nervous conduction and this conduction takes place in the central nervous system, there is, firstly, an ingoing or 'afferent' nervous current conveyed to the spinal cord, the hind-brain (including the cerebellum), the mid-brain, or the fore-brain (including the cerebral hemispheres), and thereafter an outgoing or 'efferent' discharge. The process as a whole is initiated by a stimulation; and it terminates in response. The cord and brain system are thus literally central in their co-ordination, and in an orthograde (or erect) animal, like man, they are also literally the higher and lower levels in the cord and brain.

In decerebrate animals (or in man when, as the result of injury or disease or anaesthetics, the cord is cut off from the higher arcs) certain responses may take place through the spinal cord alone. Thus the knee-jerk, the scratch-reflex, and certain postural responses may continue, and the possibility of these reflexes is taken to prove the integrity of the cord at this or the other level. Again, in man, cutaneous reflexes connected with certain skeletal muscles are assigned to different levels of the cord. So also is the nutrition of these muscles, as is shown from diseases of the cord, such as infantile paralysis.

In the normal animal or human subject impulses which are organized for some reflex response at some particular level of the cord, also communicate with higher portions of the cord and brain-stem; and their action may in general be inhibited or otherwise modified through these more extended connexions. If this further connexion is severed, differences in behaviour accordingly ensue. The general character of these differences may be described by saying that the animal or human subject in those conditions behaves, to all seeming, less purposively and more automatically.

This conclusion has an obvious bearing upon the mind-body problem. Speaking in terms which are partly psychological, we have to say that, if the continuity of the cord with the brain is interrupted, reactions which are spinally governed are neither felt nor affectible by voluntary processes. The same is true of the hind- and mid-brain, and, indeed, of all parts of the central system except the cerebral hemispheres. The cerebellum, for example, which is part of the hind-brain, has important effects on the muscular system. Thus the 'knock-out' blow on the chin makes a strong man a mere quivering heap through its cerebellar effect; and head and neck movements seem again to be cerebellar.

In other words, all psycho-physical connexion, at any rate of the kind we associate with consciousness, must be psycho-neural; and, more particularly, psycho-cerebral. To this it would generally be added that such connexions cannot simply be psycho-cerebral, but must also be psycho-cortical. In other words, it is the cortex of the hemispheres, not any other part of them, that is the 'seat' or the 'organ' of consciousness; and at one time it was part of the orthodox creed that certain areas of the cortex are exclusively concerned with particular conscious functions.

From the physiological standpoint the cortex is the highest and most delicate shunting and exchanging station in the central nervous system. The afferent and efferent arms of the longest reflex pathways meet in it; and among these, the afferent portions are held to yield sensation, the efferent to initiate motor discharge. Memory and association are also believed to belong to it, although for reasons which may well seem inadequate. Mr. Noel Paton, for example, is content to offer the following argument:

'It is the association of present stimuli with past sensations which is the basis of intellectual life, and in man the frontal and

parietal lobes of the brain are much more developed than in the lower animals. So far, stimulation of these has failed to give any indication of resulting sensations, or to produce muscular movements. They may be extensively injured without loss of sensation and without paralysis, and hence it has been concluded that the storing and associating functions must be chiefly located in them.'[1]

This is equivalent to an admission that our theories of the neural correlates of memory and association are still little better than guess-work. What we know is the existence of many paths of connexion, the necessity for them, and the impairment of memory and similar functions after inflammation of these tissues, or in the softening, atrophy, or sclerosis of these portions of the hemispheres. Regarding sensation, however, the proof is stronger; and physiologists, in the years immediately succeeding 1870, believed that the cortex could be mapped out into areas anatomically independent, and specifically correlated with distinctive classes of sensations. Broca's work on the speech centres, following upon his study of the lesions found in aphasia, was perhaps the most solid in this regard; and for long it was held that a particular area on the left frontal lobe was the centre for articulate speech, and that this area was connected by association tracts with another 'motor-emissive' area for written speech. Disturbances of these lead to motor aphasia (or functional inability to utter what the patient intends to express); and they are connected with sensory aphasia in the afferent approaches, i. e. with 'word-deafness' (or the inability to understand words which undoubtedly are heard).

Later research, however, has cast serious doubt even upon Broca's achievement. Thus Marie brought evidence to show that an additional sub-cortical injury is always found in pure

[1] *Essentials of Human Physiology*, p. 207.

motor aphasia.[1] In short, the theory of determinate cortical localization is now somewhat blown upon. It was never very plausible to assign to the mere topography of the cortex pronounced differences in sensation when there was no likelihood of specific differences in the nervous structure of these centres, or of the nervous impulses which pass through them. What was, and is still, likely is the functional grouping (subject to restitution and reorganization in exceptional cases) of the impulses from sensory sources with their usual companions and with the motor discharges to which they normally prompt.

It is still believed, for the most part, that the cortical areas, particularly those around the central fissure, are the sole portions of any nervous arc that are directly connected with consciousness. In certain quarters, however, there is a disposition to modify this opinion in view of the results obtained from the study of the thalamus and tectum, i. e. of the centres from which impulses pass, immediately, by synapses, to the cortex; and Dr. Head believes that certain of the cruder forms of sensation may be brought about by the thalamus only. The trend of this argument is too important to be omitted.

'Afferent impulses on their way from the periphery to the cortex', he says,[2] 'pay toll first of all to the unconscious coordinating mechanisms of the spinal cord and the cerebellum. Then after being regrouped at the thalamic junction they act upon two terminal centres. One of these, the essential organ of the optic thalamus, responds to all those elements which can evoke consciousness of an internal change in state, more particularly pleasure and discomfort. Sensory impulses then pass by way of the internal capsule to act upon the cortex, and these are the afferent materials out of which the cortex manufactures the forms of sensation with which it is concerned.'

[1] See Lickley, *The Nervous System*, pp. 86–7.

[2] *Studies in Neurology*, p. 602.

In his view these forms of sensation are (*a*) recognition of posture and appreciation of passive movement; (*b*) recognition of tactile qualities other than contact and roughness; (*c*) spatial discrimination of size and shape; (*d*) localization; (*e*) thermal sensations. More generally the cortex, on this view, is the organ of attention and discrimination. 'The sensory cortex', we read on p. 609, 'is the organ by which attention can be concentrated on any part of the body that is stimulated'; and on pp. 755–6, the cortex is assigned the triadic function of recognizing spatial relations, making graduated response to stimuli of differing intensity, and appreciating similarity and difference in external objects brought into contact with the surface of the body.

The motor or discharging areas of the cortex are situated in the neighbourhood of, and chiefly in front of, the central fissure. All the sensory and connective portions of the cortex play upon this region, and there is sufficient evidence that the more delicately co-ordinated of our movements depend upon its integrity. 'Thus, a monkey with part of the middle portions of the Rolandic areas removed may be able to move its arm and hand, but may be quite unable to pick up objects from the floor of its cage.'[1] This relative absence of discrimination in the reaction accords with the evidence previously given, but since there is no good evidence of 'innervation-feeling' (or the conscious tapping of outgoing neural currents at their source in the cortex), it may reasonably be asked how this evidence directly concerns the mind-body problem. The answer is, firstly, that the connexion of afferent with efferent process is always important. The cortex, in its essence, is not the resting place of sensory impulses, but the point of transition between sensory stimulation and reaction. There is often a pause in it (as is shown by reaction-time experiments), but there is neither sepulture nor complete repose; and

[1] Noel Paton, op. cit., p. 215.

the consciousness, in all probability, is peculiarly connected with the change, direction, and purposive transition at the synapse. Secondly, the movements in question are of the type we call voluntary—that is to say, they are amenable to conscious control, and although they *may* be non-voluntary or even unconscious, they may also be initiated (as we say) by intentional resolution.

A brief account of Sir Charles Sherrington's views concerning the physiological position and dominance of the brain may appropriately conclude this stage of our discussion. The central nervous system, he maintains, is an organ of co-ordination yielding orderly patterns and sequences of reaction.[1] This system forms a single whole, and is richest in its connexions with exteroceptive receptors. The more delicate of these are distance receptors, and 'the brain is always the part of the nervous system which is constructed upon and evolved upon the "distance-receptor" organs'. These adapt the organism for anticipatory or pre-current reaction, as opposed to the mere acceptance of a *fait accompli* in a 'consummatory' reaction. They are also peculiarly well supplied with 'internuncial' or connective paths. The head is the main distance receptor both as regards the visual receptors in man and as regards the olfactory receptors which are the principal pole of cerebral organization in a lower type of brain-development. 'The motor train behind, the elongated motor machinery of the rest of the body, is therefore from this point of view a motor appendage at the behest of the distance-receptor organs in front.' In short, 'the cerebrum itself may be indeed regarded as the ganglion of the distance receptors'.

These considerations are highly important, yet they may seem curiously one-sided. The pith of the argument is restricted to movement and muscular tone, and especially to movements which are delicately discriminative, accurately timed, and very prompt.

[1] *The Integrative Action of the Nervous System*, Lecture IX.

More diffuse reactions, and the regulation from entero-ceptive sources of the viscera and other internal organs most essential to life, are treated as if they were of secondary importance from the standpoint of consciousness and brain. Yet these clearly affect our consciousness, even if more massively and less controllably than the others; and they also affect the brain. The pineal and pituitary bodies, again, although arising early in the order of embryological development, are ductless glands belonging to the fore-brain. In short, whether we consider the facts of consciousness or the structure of the brain, we are driven to the conclusion that other elements than those appropriate to the 'ganglion of the distance receptors' may be of the utmost moment.

The glands and smooth muscle of the viscera are never innervated directly from the central nervous system, but on the contrary by the 'autonomic system' (in Langley's phrase). Anatomically, this system is either cranial, thoracico-lumbar, or sacral, and the second of these is usually called the 'sympathetic' system. This sympathetic system is far more diffuse in its action than the central nervous system; and it is non-voluntary. It need not, however, be unconscious. The cranial system has a restricted distribution to eyes, heart, lungs, single arteries, stomach, and small intestines; the sacral system to single arteries, distal colon, bladder, and external genitals. The cranial and sacral systems are antagonistic to the sympathetic.

The connexion between the sympathetic system and the emotional effects upon the organism has already been considered in the first part of this chapter. From the physiological standpoint it seems apparent that secretions from the endocrines ('ductless glands') act as neuro-chemical regulators. The effects of their removal and of the administration of thyroid and other extracts have captured medical attention almost as thoroughly as the hope of rejuvenation from this source has attracted the

popular mind. The removal of the thyroid in children (say after an operation for tumour) leads to intellectual, as well as to bodily, infantilism. The impaired mentality of eunuchs has long been a matter of common knowledge among the curious; and the rapid ageing of women between the ages of forty and fifty, psychical as well as physical, seem to be due to the loss of a definite chemical substance. An up-to-date writer of 'shockers' credits his villains, nowadays, with some cachexia of the thyroid—and does so with the encouragement of biologists. I quote from *Daedalus*

'We already know that many of our spiritual faculties can only be manifested if certain glands, notably the thyroid and sex glands, are functioning properly, and that very minute changes in such glands affect the character greatly. As our knowledge of this subject increases we may be able, for example, to control our passions by some more direct method than fasting and flagellation, to stimulate our imagination by some re-agent with less after-effects than alcohol, to deal with perverted instincts by physiology rather than poison. Conversely there will inevitably arise possibilities of new vices similar to, but even more profound than, those opened up by the pharmacological discoveries of the nineteenth century.'

These dreams may well be prophetic. At any rate, the grounds for them, in a sense, are firm and just. There *is* this physico-psychic side of character. Yet even if the neural conditions of mental process were nowise mysterious, the mode of their operation has still to be explored. From the standpoint of behaviour we may certainly conclude that conscious process continues and improves the regulations of the unconscious portions of the nervous system. Vigilance, attention, memory, expectation, the warnings of pain, and the approbation of pleasure, seem manifestly to have biological utility. If the higher brain-centres form a distance ganglion, the biological mind (so to style it) may form a temporal ganglion, refining, elaborating, and instructing

the natural rhythm of the reflex system, much as the distance receptors give a wider and more discriminating range of adaptation than those receptors which have the epidermis for their ultimate horizon. Conscious meaning, again, read into the facts of habitat and surroundings, is just that cunning and sagacity which is the biological justification of intelligence. It is less essential to a sheltered social being than to one who has to fend for himself and, in a way, it is less profitable than the cunning of *embusqués* or the security of *rentiers*. For others it is a little thing in comparison with scientific curiosity or aesthetic artistry. Yet all must have it in a measure, and all may be thrown back upon it.

This continuity of function, however, is merely a statement of the solidarity and unification of effects, and is consistent with *any* theory of the manner in which these effects occur or of the agencies which produce them. Analogies may indeed be shown between the inhibitions, control, and 'precurrency' of conscious process on the one hand, and control from the mid- or hind-brain upon the other. It is a fair conjecture (perhaps) that some dim form of consciousness accompanies change and oscillation of nervous impulse at the central synapses of any internunciated nervous system; and that man's form of it is the highest in his particular system. Yet when we have made this guess, or accepted it as an 'axiom', or explored all confirmatory support, we are still in our ignorance concerning much of substance and of principle.

If Dr. Head is right we should have grounds for believing that the cerebral cortex is specially connected with analysis, comparison, and attention—in short, that it is the organ of intelligence. Strictly, however, all that the most ardent of his disciples could reasonably suppose themselves to have *proved*, would be that beings whose thalami lead through a synapse to the cortical centres (by a fresh path and fibre) require this cortical reticula-

tion for spatial and other discriminations. If the function of the cortical area, in a nervous organization of this pattern, were to present the material of comparison and discrimination in a form which made these processes prompt and accurate, the utmost that could be said to be *shown* by the evidence would in fact have been drawn upon. The integrity of the cortex and of its cerebral connexions would have been shown to be essential to the possibility of certain sensory comparisons and to certain of the finer and more delicate responses of our muscular apparatus.

This would be much; and although Dr. Head's conclusions may be doubtful, something of the sort may be conclusively shown at a later date, and perhaps in the near future. It is a far cry from this, however, to the mental process even of a stupid man. If we grant (as seems reasonable) that cortical process is necessary to recognition of our bodies and of their surroundings, and also to the utterance, expression, and responsible behaviour connected with this recognition—if we grant, furthermore, that the integrity of cortex, thalamus, and tectum supplies a certain visible foundation for the unity of a mind regarded quite simply as a biological implement—we are able to understand something that vitally concerns our psychical being. Spatial internunciation in our brains brings together that which we discern in the unity of our comparisons. Spatial separation in our brains (whether morbidly in dissociation or normally in the usual differentiation) may well be part of the basis of discrimination in matters which concern sensory differences and rhythms. These are allied with the finer responses of expressive or skeletal muscle; and the hints or the cues which are the very substance of 'meaning' in these affairs, are similarly explicable quite readily. Alterable patterns of response, again, exhibiting gradation and a certain serial harmony and plan-like adjustment, are not entirely unintelligible in these terms; and the tenacity of will and purpose may correspond in

certain obvious ways to the tonicity and persistence of cortical process. What we usually mean by mental control, however, is something far wider than this, and ordered in an autonomous series. It is a thing of judgement, not of associative proximity, of value and not of pleasure, of loyalty not of excitement, of aspirations in place of mere expectations; and even the poorest, most confused, and least admirable organizations of this species seem to respond to a pattern and incitement which may require, but cannot be formed by, this neighbourly contact round the central fissures of the hemispheres.

The arguments which spring from the facts of the autonomic system, and more generally the connexion between conscious process and the more diffused, reverberating and nutritive functions of nervous apparatus, while they increase the complexity of the problem, lead also to a certain *rapprochement* between scientific discovery and every-day observation. It is not merely with muscular response in the 'voluntary' or skeletal system that we have to do, but also with health and poise, depression, and exaltation. The complexity of the problems so arising, however, shows how far we are removed from having any proper warrant for ascribing particular psychical patterns or characters to specific neural areas. We know, for example, that a general condition of the occurrence of conscious process (so far as our reactions suggest to others or our memory attests to ourselves) is a plentiful (although not an excessive) blood supply. Cerebral anaemia seems to occur normally in sleep, or again to be the cause of fainting. Similarly we seem to discern the need for an infant science of psycho-chemistry. The toxic action of drugs, or fatigue products, or inflammation on the one hand, and the psychic need for minute quantities of ferments from the endocrines upon the other, indicate this requirement; and there is no metaphysical impossibility in supposing that the mind may

have direct bio-chemical influence as well as the capacity for responding immediately to such influence. A more conservative (and perhaps the correct) theory would maintain, to be sure, that the blood-supply and the dropping of these eager ferments act indirectly upon our consciousness, directly upon the nerves; and certainly the hemispheres must be affected if these psychical consequences are to happen. It is another thing to argue, however, and perhaps an improbable thing, that the *only* influences from this source that concern psycho-physics are influences upon nervous *conduction*. There are several essential factors; and that is all we know.

Even when the body is starving the brain is relatively well supplied with blood. It is therefore nourished and capable of performing its functions. Consequently (we say) the mind may be alive when the body is near to death. The same holds of old age. If it is the aim of the art of medicine to enable us all to die of senile decay, senile dementia may nevertheless be long delayed; and even on this hypothesis, it may still be questioned whether the natural end of every man is the asylum. If mental senescence is not postponed, however, what inference are we to draw? Must there be cerebral lesions, miliary aneurisms, or disturbance of neural conduction through condensation of the bones? Or is the trouble directly caused by some alteration in arterial pressure, venous congestion, or the absence of some essential secretion from a ductless gland? We can put these questions, but when can we expect the answer?

III

Hypotheses concerning the connexion between Mind and Body

The discussion, hitherto, has been meant to be descriptive. What we sought was an account of those mental and bodily facts which appeared to be peculiarly closely related. And this we sought in broad outline, but with certain aspirations towards completeness in our survey. It remains to consider theories of psycho-physical connexion.

Any such theory must be a hypothesis, that is to say, it must be a suggestion, intelligible in itself, which, if it were true, would explain the observed facts at every level.

From the nature of the problem such hypotheses must be speculative. They are, in fact, speculations designed to elucidate the phenomena. And if several hypotheses may be designed in this problem, which are not flatly inept and contrive somehow to gather all the facts together, the most that could be shown would be that some one of them was more probable than any of the others, according to the available evidence.

These speculative inquiries plainly exhibit a difference which corresponds roughly to the distinction between speculative science and speculative philosophy. By the former I mean those hypotheses which confine themselves, in the main, to the questions which are set by the facts described. They are devices to piece the puzzle together and to stop there. Indeed they may even halt before this point and content themselves with offering some 'working' or 'methodological' device sufficient for the needs of the sciences that are concerned, at some given stage of their

development. By hypotheses of the latter sort I mean some attempt at a comprehensive speculation designed to bring any proffered speculation into alignment with our general knowledge of the universe.

In the present chapter, then, I intend to consider speculative hypotheses of the former and more scientific cast, although I have to admit that many of these, in the form in which they are usually presented, either assert, or plainly reveal, the presence of a philosophical background. The latter type of speculation will be the subject of the remainder of this little book.

As we saw in the first chapter, psychological and bodily facts come to us from different sources, and *seem* at least to be organized into patterns that are characteristically distinct. Nothing in the more scientific descriptions which were the theme of the second chapter contradicts this prima facie dualism—or, if the reader prefers, this duality or twofoldness. Accordingly, any attempt to sweep all the phenomena together into some entirely catholic synthesis must be accounted philosophy. It may be good philosophy or very bad: but at least it is philosophy: and so it calls for postponement. For present purposes, therefore, we have to deal with speculations which, if they do not wholly accept, are at least framed in conformity with, this ostensible twofoldness of the problem.

So regarded, the problem clearly permits of three essential types of hypothesis, and of three only. Either the mind depends on the body, or the body depends on the mind, or the two are independent, although conjoint. Various modifications of these theories are, of course, possible, since each, departing from its purity, may concede little or much to one or both of the others. All that is argumentative in these affairs, however, must fall within some one of these three divisions—so long, that is to say, as the twofold character of mental and bodily series is admitted.

Of this trio of possible lines of hypothesis, the second in the eyes of science, and of plain common sense, may seem so ridiculously extravagant that no one save a speculative philosopher could seriously entertain it. It is idealism of the most ideagenous sort; and idealism (as most people think) is confined to poets and seers and metaphysicians. It can never appeal to hard-headed people with an appetite for 'facts'.

By an oddly ironical circumstance, however, it happens that Huxley and Clifford (who are commonly considered the chief protagonists of the first type of theory) were, in reality, partisans of the second. Like many of the scientists of the present century, and like all except a very few of the scientists of their own generation, they believed that matter (as we usually call it) is truly a mental phenomenon; and their actual contention was that our consciousness is a *bye-* or *epi*-phenomenon of the physical phenomenon which we call our brains. We are epi-phenomena of a phenomenal automatism. This, however, is metaphysics; and the dependence of mind on brain is alleged to be scientific. What we find in introspection and call our mind *is* completely dependent, according to their theory, upon those sensible facts which we call a body, and earth, and stars, and ether. Apart, therefore, from their metaphysical interpretations of the ultimate nature of things, the theory of these authors was of the scientific type.

The theory of mutual independence in any effective discussion must be subdivided into two forms. In one of these forms the hypothesis of interaction is accepted in the same general fashion, at least, as common sense accepts it. In the other form, interaction is denied, and a mere parallelism (or point-to-point correspondence) between mental events and some stage or level of neural occurrence is maintained to be the truth.

Since the crucial arguments which are alleged to refute inter-

action are usually supposed to leave the alternatives of parallelism or of one-sided dependence open, and since one-sided dependence itself implies a species of point-to-point correspondence between mental and neural process (or between psychosis and neurosis, as the phrases run, rather barbarously but for short) we have to consider the logical character of these arguments concerning interaction as the critical part of the non-metaphysical debate.

There are two of these crucial arguments, the first of them maintaining that the utter disparity between mind and body makes nonsense of the theory of their mutual action, the second that this mutual action, if it occurred, would contradict the physical principle of the conservation of energy. The first of these arguments has a very long history, and is most amply explored in the pages of Descartes, Spinoza, and Malebranche. Since the marrow of it, however, is almost absurdly uncomplicated, Clifford's trenchant, if partial, account of it may here suffice: 'If anybody says that the will influences matter', he asserts, 'the statement is not [only] untrue, but it is nonsense. The will is not a material thing, it is not a mode of material motion. Such an assertion belongs to the crude materialism of the savage. The only thing which influences matter is the position of surrounding matter or the motion of surrounding matter.'[1] The second crucial argument may also be stated in Clifford's words:

'The train of physical facts between the stimulus sent into the eye, or to any one of our senses, and the exertion which follows it, and the train of physical facts which goes on in the brain, even when there is no stimulus and no exertion—these are perfectly complete physical trains, and every step is fully accounted for by mechanical conditions. . . . The amount of energy is the same as before by the law of the conservation of energy. That energy is spread over a number of threads which

[1] Essay on 'Body and Mind' in the *Lectures and Essays*.

go out to the brain, and it comes back again and is reflected from there. . . . There is no more reason to assert that there is a creation of energy in any part of an organic body, because we are not absolutely sure of the exact nature of the law, than there is reason, because we do not know what there is on the other side of the moon, to assert that there is a sky-blue peacock there with forty-five eyes in his tail.' [1]

Thus the late-born argument (for the doctrine of the conservation of energy is new) enforces and confirms the older one.

The fundamental question, therefore, is whether these contentions are true; and of this it must be said that at any rate there is no means of showing conclusively that either of them is. The disparity of mind and body is of course the very quintessence of dualism; but it is quite another thing to attempt to show that this disparity precludes causal influence. By causality, in a scientific sense, we mean, firstly, a regular succession of antecedent and consequent such that a specific change in one thing at a given moment is followed by a specific alteration in the same or in another thing at another moment. This implies continuity and connexion between cause and effect; and we should like to believe, although we cannot always show, that causes are related to their effects in such a way that the cause produces, determines, and explains the effect.

Is there any sufficient reason, then, for maintaining that any one of these requisites (or *desiderata*) is lacking in the apparent intraction of mind and body? Let us choose any simple instance and consider. A man hears the telephone-bell give its irritating summons; resignedly he grasps the receiver and puts it to his ear. Clearly what seems to happen is that the sound-waves from the bell impinge on his ear and stimulate the nerves which reach his brain. He interprets the sound as having a certain

[1] Essay on 'Body and Mind' in the *Lectures and Essays*.

meaning. He resolves upon a definite mode of action from motives of politeness or policy. And he grasps the receiver. The *requisites*, then, are fulfilled. The stimulus is specific, being of a quite definite sort. The man's mental state is also specific; and so are the actions which follow. Again the occurrence is regular, not indeed in the sense that a single reaction invariably occurs (for man is at least as complex as the weather), but in the sense in which the weather is regular: that is to say, that there is always a sufficient difference in the causes and total conditions, if different effects occur. Further, the process is continuous in the only relevant sense—that is to say, there is temporal continuity.

So much, then, for the requisites. The *desiderata*, to be sure, are more disputable; but then they always are disputable when causal relationship is in question. Is it always clear to us, in the mental series, why our innocently intended remarks should be met with tears or dudgeon, or, for that matter, why distressing tidings should leave us so calm at first and afterwards gnaw us so remorselessly? And is it always clear in the physical series why the pituitary body should have such a profound effect upon adiposity? We have to take these things as we find them, very often imputing dependence, production, and intelligible determination where we can, and, for the rest, supposing a reason when we cannot see it. In many ways, indeed, there is a greater rather than a lesser intelligibility in this mind-body series than in any other. The first law of motion has a brutal finality about it which is divined but does not, strictly, stand to reason. In our telephone series it is at least intelligible that the bell is a signal, and that the response is adapted to what the signal may portend.

In short the alleged absurdity of this psycho-physical influence simply does not exist. There are immense gaps in our knowledge of the affair, since, although we know a good deal about the sound-waves before they reach the ear, and about the central

mental phenomenon, and about the physical effects of the final reaction, we know enormously less about the intermediate stages in the inner-ear, the nerves, and the hemispheres. The existence of gaps, however (which is demonstrable), has nothing to do with nonsense; and there is no use in attempting to beg the question by excogitating ridiculous illustrations. We are sometimes invited, for example, to consider the absurdity of a railway train united by the friendly relations between the engine-driver and the guard; and certainly we may grant that this is an insufficient method of coupling the coaches. All that the illustration proves, however, is that our minds are not omnipotent in their effects upon *any* sort of body. If we consider, instead, the effect of the engine-driver's mind upon his own body, and thereafter upon the motion of the train, the supposed absurdity becomes quite singularly attenuated. The engine-driver's skill, and the threat of a fine if he is late, do appear to make a considerable difference to any ordinary railway train.

Physical science, it is true, has explored a certain kind of causal continuity very thoroughly indeed, and has trained itself to divine the traces of a certain type of causal series. This series is severely spatio-temporal; and it has gaps of its own regarding colours, and tastes, and other 'secondary' qualities. This residue of properties, from the standpoint of physics, is simply correlated with the others, not interwoven with their substance. Despite these gaps, the successes of physical science, both practical and speculative, are a signal tribute to the ingenuity of a small, patient, faithful, proportion of mankind. There is no occasion, however, to make a stumbling-block of this immense achievement, and to account it a denial of other causal connexions which are neither nonsensical nor seriously perplexing in their essence. If the mind and its body, or the mind and any physical body, are radically different to a degree which is without a parallel in any other

natural difference, it is not to be expected that any series in which both are involved could be other than singular. Nevertheless, such series may occur; and we seem to have excellent evidence that they do. The opinion that there can be no such connexion on account of the general principles of causality, is itself but a doting superstition. It was formerly supposed, in the teeth of the plainest evidence, that a cause must be *like* its effect. This gratuitous dogma survives in the myth that mind and body, being *unlike*, cannot affect one another.

The principle of the conservation of energy, as applied to this problem, is at least as little conclusive. All that the principle entitles us to say, even in the most favourable instances, is that there is a constant ratio, in a closed system, between quantity of heat, electric potential, and other forms of physical energy. Thus a system which loses a certain amount of kinetic energy has a definite and predictable thermal gain when no other change occurs than its rise in temperature. The formulae which state these laws assign these ratios between the different physical units: and this is the first relevant point. The second relevant point is that experiment seems to show, with an accuracy sufficient to convince, that physical organisms are, in this sense, closed systems, that is to say (as Mr. Broad puts it in *The Monist*, vol. xxviii, No. 2) that 'over the period of the experiment, the total amount of energy given out by the body in heat and movement balances that lost by the food eaten and the air breathed'.

Now, if we accept these results, and even if we interpret them generously, it is plain that this argument, taken in all its scope, is very far from proving the desired conclusion. If psychophysical connexion necessarily implied the existence of some variety of mental energy which was also a physical quantum and subject to physical laws, we should be entitled to expect that this quantum should exhibit its proper ratio as the other quanta

do; and if the quantum can never be detected after careful experiment, we should have very good grounds for concluding that there is no such entity. To be sure, these measurements in a complex organism are only approximate, and since an exceedingly tiny force *may* make an immensely critical difference, it is always *possible* that a minute dose of this energy, even harder to detect than the speck of poison in botulism, might do all that an interactionist expects it to do. A supposition of this kind is not at all comparable to Clifford's sky-blue peacock on the other side of the moon. There is *no* reason for believing in this peacock's existence; and there *are* reasons for supposing that psychoses affect neuroses. Still this supposed quantum ought to reveal itself; and it does not. But, then, why should there be this psychic 'energy'? The question is whether mind affects brain, not whether it affects brain by creating and using a specific 'energy'; and if the brain were affected without the creation of this energy, all that would follow would be that this action, when it occurs, neither augments nor diminishes the total amount of thermal, electrical, and other energy which the body possesses. In other words, the mind would have to make use of the body's physical energies, no more and no less. This, if it is true, is not at all hard to believe.

Accordingly, this objection also falls; and the reader, if he still scents a difficulty, may be comforted by the assurance that there is very excellent physiological opinion against any truculent employment of this principle in these affairs. Thus, Dr. Adrian, in his contribution to the symposium on 'The Conception of Nervous Energy', at the Sixth International Congress of Psychology in 1923, begins his argument as follows:

'At present I do not think that the physiology of nervous conduction has advanced far enough for its results to be of any real significance for the psychologist (except in so far as he studies

the physiology of the sense organs); speaking from a purely physiological point of view, it seems to me that the less we say about nervous and mental energy the better.'

And he concludes thus:

'The arguments I have brought forward could really have been stated in a few lines. They amount to this: if we use the word "energy" in its purely physical sense, the conception of nervous energy is unnecessary, and that of mental energy is impossible. If we use it in another sense, we must be careful to define its meaning exactly or we run the risk of assuming that it must necessarily follow the rules which have been found to govern the transformations of physical energy in material systems.'

If interaction is a possible theory, and if, as we have seen, there are strong prima facie grounds in its favour, we have to conclude that any other theory must show its superiority on its own positive merits, and not by default of the ostensible explanation. Here we may say with confidence that epiphenomenalism, or the theory of one-sided dependence, is immensely improbable. According to Huxley and Clifford, as we have seen, the mind cannot act upon nervous process. The soul, in their opinion, is totally inert, 'related to the body as the bell of a clock to the works', and 'there is as much propriety in saying that the brain evolves sensation, as there is in saying that an iron rod, when hammered, evolves heat'.[1] Plainly, however, if the mind, on account of its disparity, cannot possibly act upon the body, the body, on account of this very disparity, cannot possibly act upon the mind. If, on the contrary, mental functions are really struck out of the brain, as sparks are hammered out of heated metal, then consciousness, like the sparks, is really a mode of physical energy, and consequently not only may but *must* have a physical effect. It is downright materialism, not the monster of epiphenomenalistic

[1] Huxley, *Science and Nature*. Essay on 'Animal Automatism'.

dualism, that is the message of these arguments, even if the materialism is interpreted in the peculiar currency of Huxley's metaphysics; and materialism itself, as we shall see, is not inconsistent with the ascription of pronounced force and character to those highly specialized material patterns which (as it maintains) are the authentic facts that, usually, we call a mind. There is no point in saying, as Huxley does, that it is 'experimentally demonstrable—any one who cares to run a pin into himself may perform a sufficient demonstration of the fact—that a mode of motion of the nervous system is the immediate antecedent of a state of consciousness'. If this is demonstration, Huxley, by the same argument, supplied a sufficient counter-demonstration when he set about making those inky marks upon paper which are his celebrated essay upon 'Animal Automatism'. For here the immediate antecedent was Huxley's intention to convey a provocative thesis; and it may be doubted whether Huxley, when he wrote his essay, supposed, in his own case, that this clever employment of an elegant pen was simply a piece of automatism or truly comparable (to adopt another of his illustrations) with the sermon that the somnambulist clergyman is supposed to have written.

It is parallelism *pur sang*, then, the parallelism of two independent series which correspond point to point but do not affect one another, that is truly the consequence of a dualistic theory which is based upon the indefensibility of admitting interaction. Such parallelism may be defended upon the following grounds. In the first place, it may be argued that there is in any case a point-to-point correspondence between mental and neural process, and consequently that parallelism and any other theory are but alternative readings of the same admitted set of facts. Parallelism is therefore to be accepted on the principle of Occam's razor. It confines itself to what is true on any theory, and refuses

to entangle itself in what are really the hotheaded superfluities of common-sense opinion. In the second place, even if mind *might* act upon nerve, or nerve upon mind, the causal relationships within the mental or neural series respectively are at least far more intelligible and far more fruitfully to be explored, than any transition from the one to the other. Hence the conclusion is drawn that 'methodological' parallelism, or parallelism as a scientific policy, is the ruling principle of a sane physiology or of competent psychological treatment, and that the theory of parallelism itself is simply the generalization of sound scientific procedure.

The first of these arguments owes its plausibility to its incompleteness. On any theory there is *a certain* correspondence between psychosis and neurosis, but the most critical and important distinctions might, nevertheless, be additional to, although enclosed within, this general correspondence. The mental series, we believe, does not occur at all if the cortex is damaged in certain ways, or cut off from the blood supply and deprived of oxygen and other chemicals. A general correspondence of this sort, however, is no sort of proof of a specific point-to-point correspondence in all particulars. Even if there were definite cortical localization, in the sense which was formerly supposed and now is doubted, only a very restricted type of parallelism would thereby be proved. The neural paths which have to do with sensation and movement would in theory be mapped and tracked completely; and there would be point-to-point correspondence between *these* and the mental functions corresponding to them. This limited parallelism, however, would be entirely consistent with an effective interaction between mind and body. If the mind, regulating itself in its own fashion, proceeded through its preferences, loyalties, and intentions to actuate its body, this mental adjustment, for all that cortical localization shows, need

have *no* specific neural correlates. All that this mental regulation would require would be a general integrity of the highest centres in the neural system together with the specific integrity of the neural processes which have to do with sensation (including its echoes in imagery) and movement.

In effect, the general correspondence which we may admit to be presupposed on any theory is very different indeed from a final and thoroughgoing parallelism. Let us consider, for example, the logic of the controversy between those who repudiate parallelism on the ground that it annihilates free will together with the efficacy of human volition, and those who maintain that it has no such consequence. In a sense the second party is in the right. Although mental and neural series are shut off from one another, like two windowless houses on opposite sides of the street, each is supposed to rule effectively within its own domain. Within the mental series, therefore, all that we think and do would have its own proper and mental efficacy. A demon from outside would be aware that whatever passes within the one windowless house is matched with precise correspondence in the events in the other windowless house. There is causality within each; and otherwise a mere correspondence. On the other hand, it has also to be admitted that if parallelism is accepted as a final predicament, and carefully sheltered from metaphysical intrusions, it would follow that if, by any chance, one of these houses were destroyed, the other would continue just the same. According to the theory, we know, in fact, that this never occurs. When the one house goes the other does too; but the destruction of the one (again on the theory) never affects the other; and as no reason can be given why there should even be parallelism at all (such reasons being necessarily metaphysical) it does follow that the body always acts as if there were no such thing as a mind, although in fact there is one. Here we do find

a vital difference from a theory of effective interaction. On the interaction theory the murderer (let us say) perceives his victim; and his afferent nerves are the conditions of this perception in a quite specific fashion. Thereafter he forms his plans and directs his hatred. To do so he must have blood in his brain and an active functioning of his cortex, but no specific correspondence between his planning and hatred, on the one hand, and any specific modification of the brain, upon the other hand, need be supposed except in so far as images and sensations continue to enter. We may even suppose that the murderer delays any muscular reaction of an overt sort until his plan has matured. Then he pulls the trigger. Obviously, in this instance, we need not suppose that the bodily actions would have been the same if the conscious process had been absent. Apart from his planning, there need have been no delay, and very different reactions from the firing of the shot might have occurred; for the delay and the final adjustment, *ex hypothesi*, are controlled by the conscious series in a way which would not occur if there were no such control.

Parallelism, therefore, in the full sense, is very far from being a neutrally-tinted, non-committal theory that restricts itself to the universally admitted correspondence between mind and body —and then stops. It denies an influence between mind and nerve which it admits and elaborates between internuncial nerve-processes or between a thought and its successor. Moreover, it has itself to walk by faith, since it assumes (far in advance of the available evidence, and in a fashion contradictory to interactionist theories) a thoroughgoing correspondence, feature for feature and item for item, in place of the narrow correspondence in a few specified features which is all that can be called common ground, or scientific evidence, in this affair. The 'enlightened parallelist' that Mr. Stout speaks of, is not really, as Mr. Stout thinks, 'brutally empirical'. He also is a seer of visions, and it is not in fact the

truth that 'methodological parallelism' is the working policy either of psychology or of physiology. / Mr. Stout himself, who, in his theories, inclines towards parallelism (as is argued in his *Manual of Psychology*, Introduction, chap. iii), is in his psychological practice a methodological interactionist. He assumes that the incidence of light waves upon the retina is the initial cause of our perception of red, and he discriminates between the (possible) neural basis of retentiveness and association upon the one hand and 'the unity and identity of the conscious self and of its own awareness of itself' upon the other. Of the latter, he says that 'nothing like it is conceivable in the brain or in any part of the material world' (p. 84). All that the 'enlightened parallelist' has to say here is that the *utterance* say of Shakespeare in the manuscript of *Hamlet* is part of the material world—a true saying, but a weakened conclusion.

Physiologists, to be sure, may busy themselves completely with some portion of their task and need not trouble themselves with psychological questions. It is significant, however, that up to very recent times they were content to speak of 'voluntary' muscles or inhibitions, 'sensory' as opposed to pure or unconscious reflexes, 'ideo-motor' action, (psychologically) 'associative' paths; and the like. This verbal concession to current ways of thinking may, of course, have done no harm; and in any case it is usually corrected in the new vocabulary. If we consider, however, not any special problem in physiology, but the integrated reactions of a man or woman, the old problem remains despite all these changes in nomenclature, and physiologists are for the most part driven, not to parallelism as an effective piece of methodology, but to an alternative of another sort. They maintain either that physiology, without essential alteration, will one day annex the whole territory of psychology, or else, with a shrug of regret, they admit the probable influence

of a psychical factor. In the former case, we are reminded of the effective peroration to Clifford's essay upon *Body and Mind*. It is a common superstition in Europe (he says) that a small plot of land must be left untilled for the Brownie to live in. In Scotland this is called 'the good man's croft'; and science can never be content to leave 'a sort of good man's croft around the field of reasoned truth'. Here 'reasoned truth' is taken to mean the physical sciences and those only. In the latter case we speak as Mr. Noel Paton does: 'In studying such changes in the consciousness we are passing from physiology to psychology. The ordinary physical methods of recording changes have to be abandoned' (op. cit., p. 97).

Since parallelism, therefore, is *not* brutally empirical, it is hard to see why it should be regarded either as a reasonable hope or as a fruitful and cautious policy. For obvious reasons it is improbable to the last degree when taken to be a final theory. It is unfair, indeed (I think), to repudiate it, say, on the grounds which Mr. Taylor adduces in his *Elements of Metaphysics*. A mechanical and a teleological (or purposive) series, we are there informed, cannot possibly be parallel. This is true in its way; but is subject to the objection that the neural series may not be 'mechanical'. It is at least a possible physiological opinion, that living and growing bodies are not simple machines, and that reproduction or the newt's renewal of a lost limb, is precisely what no machine could conceivably accomplish. In this sense, the biological series may well be autonomous; and our problem does not concern the relation of mental process to a merely possible 'mechanical' interpretation of vitality, but has to do, instead, with the relation of a mental series to a vital one. But we need not confuse ourselves with the puzzle about the ghost and the corpse. The miracle that parallelism so loudly proclaims has the same fundamental miraculousness on any biological theory. If everything that had

a bodily aspect had also a mental aspect, this universal correspondence might very well extend to the minutest details, and the features of each of the series might be translated into the other series as script may be translated into sounds or Hebrew into Latin. Empirically, however, and without an enormous dose of metaphysics, there are no traces of this universal parallelism. The parallelism, in us or in our dogs, is between a small portion of the nervous system and the whole wealth of the individual mind. Where there are no cortical hemispheres in a healthy condition, we find no evidence whatsoever of anything that may be called a mental state. It is only by a miracle, therefore, that parallelism, denying, as it does, any psycho-physical influence, can account for its own psycho-physical limitations. If the mind is truly distinct from its body, there are difficulties in plenty, upon any theory, for attempts to understand how minds came to be the partners of a few bodies only, if these bodies, in their turn, have evolved from nerveless protoplasm and this from lifeless matter. There is something more than mere difficulty, however, in maintaining, as 'brutal' parallelism must, that nothing in the body has the smallest influence in bringing this partnership about, and that nothing in the mind has the remotest causal influence upon the use of the body. This incredible thing is just what 'brutal' parallelism alleges; and it is too much to ask even of the simplest scientific credulity.

In short, parallelism must either supply itself with a metaphysical basis or else be rejected summarily.

Metaphysics apart, therefore, we would seem to be left with interactionism, but we should we warming ourselves with a very chilly comfort if this conclusion depended simply upon the provisional ruin of opposing theories, or if the prima facie evidence of the mind's influence upon its bodily partner were the only support we could find. There is no need, however, for

supposing this. Prima facie evidence need not be worthless evidence. It is only superficial; and it ceases to be superficial if it withstands logical criticism, or deploys itself intelligibly and with some fullness. Again, an opinion is not necessarily false because it agrees with uninstructed observation. As we saw in our first chapter, common sense is entitled to be heard when the matters with which it deals ought to fall within the ambit of its experience, and are subject to the confirmation of everyday practice.

As it seems to me, a certain sustenance and a certain refining of the theory are well within our grasp, even if we admit (as I think we should) that many of the current interactionist arguments are not at all conclusive. As a fair sample of these inconclusive contentions, we may consider the 'telegram argument' in the first place, and the argument from the biological utility of consciousness in the second place. The first of these is intended to show that a very small difference in the physical stimulus may cause a momentous change in the physical reaction. Suppose two telegrams, one stating 'Our son is dead', the other, 'Your son is dead', and consider the differences in the actions (perhaps indeed in the whole subsequent life) of the recipient due to the presence or absence of this single little letter Y. These differences, it is plain, are momentous; and it is foolish of us to wonder (as we sometimes do) how a flimsy piece of paper can be our safeguard from despair. The reason, we think, lies in the *significance* of these fluttering things. Quite manifestly, they make a mental difference at least as great as the gulf between *homoousion* and *homoiousion* for a Christian theologian. This, however, is an interactionist interpretation, and the opponents of interaction are able to reply, very reasonably, that a very small physical force may make a momentous physical difference without any mental intermediary (as the pressure of the presidential button may, when it opens a distant canal). Consequently, although the 'telegram

argument' seems enormously forcible, it need not really be so. Its force depends upon its original conformity with the interactionist interpretation and not upon the physical impossibility of a small physical change having an immense physical result.

Similarly of the biological utility of consciousness. Pain, we say, on the whole is useful. If horses *liked* to impale themselves, or if dogs had a passion for carbon monoxide, the equine and canine species would not continue to flourish, and this, speaking generally, is a highly important consideration. Foresight and sagacity, again, are distinctly useful. They advise the swallows and our invalids to escape southwards in winter. In this sense, the functions we associate with consciousness continue and refine upon our unconscious adaptations; and our consciousness may, perhaps, be regarded as the most indispensable part of our biological equipment. It is plain, however, that if consciousness itself were useless, these results might nevertheless occur. If our conscious intentions simply registered the 'set' of our nerves, and pain were but an ejaculation from the struggling body, the efficient factors would be those specific bodily processes which this consciousness specifically records. Such interpretations may indeed be unlikely, but they are not downright illogical. Consciousness might be only an ineffective aroma from efficacious and distinctive regulation of the body, indicating, not performing the work of some special nervous organization.

In order to justify an effective interactionism, therefore, we must consider, more generally, whether the organization of mental process actually appears upon the whole to be *sui generis*, and characteristically participant in the regulation of action. This further contention seems indeed to be the truth. Broadly speaking, attention and interest appear, on purely psychological grounds, to be the most pervasive features of psychical process. These may be sensorially directed towards bodily reaction for

an express physical purpose; and, as we have seen, they are always connected with sensory and imaginal process on the one hand, and with somatic effects upon the other. Nevertheless, and in the main, they seem to conduct themselves in their own way and to organize themselves along the proper categories of mentality. Their very perversions, biological or social, are explicable (not fully, perhaps, but significantly) in their own terms, although, from any other point of view, they are anomalies at the best, and, at the worst, hideous, inexplicable, painful things. In a word, we have to take them at their own rating in order to understand what they do. Truth is useful to us, within limits, even biologically; for it is better to know what confronts us even if merely conjectured evils inflict thought's penalty. On the other hand, the passion for truth which leads one man to hug his microscope and let his dinner go, and another to relinquish his life rather than the letter *iota*, is not to be explained in this fashion. Often we let our interests conquer us and rejoice in the bondage; and sometimes, perhaps, we are wise.

Art, and knowledge, and loyalty, when they are the masters in their own house, seem to show in the most convincing degree the autonomy and at the same time the singularity of those regulations which are explicable in terms of mentality, and (except by the wildest guess-work) explicable in no other fashion. This is not to say, however, that attention and interest can be explained in their own terms only when they rank themselves on the side of the angels. On the contrary, sinners are as mental as saints, buffoons as mental as artists, and ordinary people as mental as either. Even the contrast which Mr. Conrad (who was a very wise man) made us note when he spoke of 'that inexplicable exaltation which the sense of their physical capacities so often gives to intellectual beings' is significant in this regard.

When we consider mental capacity in all its sweep, contrasts, failures, mediocrity, and achievements all together, we enter upon a world of which we cannot be said to know nothing or little, and into regions very characteristically mapped and not at all like 'the good man's croft'. Our markets and ships and railroads give their evidence of the stamp of mind upon the world; our religious and social systems (which alternately we consider such remarkable contrivances and such astonishing failures) tell us something concerning our divinings of the mentality of ourselves and of our fellows. To relinquish this knowledge is preposterous. To refrain from applying it to an existence which (so far as we can see) is not at all restricted to the impacts of particles, or to the shuffling of an atomic alphabet, is wholly absurd.

In dealing at such length with these speculations concerning interaction, parallelism, and epiphenomenalism, I am very thoroughly aware of an objection which is modishly and persistently brought against them all. To judge from much recent discussion, there is a growing repugnance, in a host of quarters, to the very terms in which these speculations are set. They are the product, it is said, of preoccupied fantasies and of unthinking artifice. As Mr. Dewey says in his most recent volume: [1]

'Those who talk most of the organism, physiologists and psychologists, are often just those who display least sense of the intimate, delicate, and subtle interdependence of all organic structures and processes with one another. The world seems mad in pre-occupation with what is specific, particular, disconnected in medicine, politics, science, industry, education.'

The dualism explicitly presupposed in all these discussions (he explains) is a wanton exaggeration of a natural minor severance within the continuity and solidarity of psycho-physical process.

[1] *Experience and Nature*, p. 295.

To ourselves we are body-minds, not body *and* mind, and this is how we should be regarded by psychology, physiology, and all the other sciences.

'To see the organism *in* nature', Mr. Dewey continues, 'the nervous system in the organism, the brain in the nervous system, the cortex in the brain is the answer to the problems which haunt philosophy. And when thus seen they will be seen to be *in*, not as marbles are in a box but as events are in history, in a moving, growing never-finished process. Until we have a procedure in actual practice, which demonstrates this continuity, we shall continue to engage in appealing to some other specific thing, some other broken off affair, to restore connectedness and unity—calling the specific religion or reform or whatever specific is the fashionable cure of the period. Thus we increase the disease in the means used to cure it.'[1]

The claim of many of the other writers is that the sciences have already taken this lesson to heart, and that even a provisional dualism is therefore quite manifestly *arriéré*. According to these authors, what we have to do, and what the sciences now are doing, is to exploit this solidarity of the facts, and to show the way in which distinctive patterns are nevertheless differentiations from the same stem. In place of a single dualism, we have, therefore, a multiplication of dualities, consciousness being antagonistic to the unconscious, epicritic to protopathic process, the sympathetic system interfering with the cranial autonomic, reflex patterns at a higher spinal level inhibiting those at a lower; and similarly downwards to the foundations of the organic scale in inorganic sand-patterns, osmosis and vibratory regularities. *Linear* continuity, indeed, is no longer in the fashion. The ladder gives way to a spiral, or rather to repetitive contrasts. Still, the natural system as a whole is a single unity, and the mind-body duality takes its place within this unitary series.

[1] Ibid., pp. 295–6.

Indeed, within the mind the same process goes on. Intelligence is to instinct as epicritic is to protopathic. On the other hand, both the epicritic and protopathic systems enter the mind system; and the mind system, in its turn, coils around the roots of cortical and thalamic regulation.

I have chosen deliberately to argue the question in more old-fangled terms for reasons which seem to me sufficient and, indeed, constraining. The chief of these has already appeared. So long as we consider only the biological utility of mental process we find, as we should expect to find, just those analogues, continuity and solidarity; and we test and confirm our conjectures in precisely the fashion in which we test and confirm our other conjectures in this biological field. The spectre of a *useless* psychic factor is consequently laid, for psycho-physics is a unique type of regulation, and there is no good reason for denying the efficacy of its psychic term. On the other hand, the spiritual part of us (to use a term which need not beg any questions) is, from this point of view, something vaguely honorific and out of focus—the 'good man's croft' all over again. It is just this which the facts (so far as I can see) constrain us to deny. If we take our minds at the stretch which they claim for themselves, justifying themselves in terms of value and of their own preferences, not in terms of vital utility; interpreting themselves in their own currency, not in statistics of longevity and racial fertility; showing *their own* autonomy even in their perversities, stupidities, and ill-considered loyalties; we enter undoubtedly into a different sphere. My contention is that this different sphere is different verily and indeed. Socrates may have been the first to state clearly what it means. Priests and poets may have delighted to dwell in it; but this is no proof of its inadequacy. If it were, priests and poets are to be found on the other side. Tertullian was a bishop—and a materialist. 'So serve we earth then serve

we all. Her mystic lesson then is ours,' is a lesson from Meredith. The argument, in short, depends upon the spiritual character of spiritual process, and not upon honorific appellations or gratuitous sunderings.

There is a reason why spiritual process should at least be mental. It is logical, loving, and loyal at its best. These are properties which would be angelic and deiform, if, indeed, there were angels and gods; but we cannot think of them as plainly dissociable from consciousness. The same holds of devilish devisings—if there are any devils. The possibility of a *sense* of values is always presupposed whenever we contemplate the extension of this spiritual order from men to Martian or discarnate spirits, or from these to diabolic or angelic realms. Spiritual beings must always be capable of consciousness. It is more difficult, indeed, to give a reason why these spirits should have a body. How they should use their bodies when they have them is a question more easily answered. Yet even in those terms there is no insuperable difficulty in admitting, in our own case, all the continuity and solidarity that we find within our own mind-body systems. Even dualism, proclaiming a difference in kind between the partners, does not deny that there *is* a partnership, or that the partnership is subtle and intimate.

To be sure, dualism is a very hard word. In looking for system we hope for unity. What we have to avoid in our zeal is the purchase of this unity at too great a price. The price here is the denial that spiritual regulation, at its best and at its worst, is profoundly and quite singularly different from the vital regulation of the body. When we think of spirit at its worst we should like to pay the price; but our likings are irrelevant. The question is where the truth lies; and the pith of the problem is to be found in the inadequacy of every theory which maintains that when we have answered the question,' 'Why the body should

have a mind?' we have bridged this 'broken-off affair', and have nothing left for our hands but the painting of the bridge.

It may be contended, indeed, that philosophies which are not dualistic may plausibly explain these enigmas. This I do not deny; but these other possibilities are essentially philosophical, and fall to the next chapter. So also does dualism itself. If it is truly a tenable speculative hypothesis, it must be able to defend itself in the arena of metaphysics. Within this mind-body system, however, there does appear to be an effective dualism and the merit of these nineteenth-century discussions concerning interaction, parallelism, and epiphenomenalism is just that they set themselves, clear-headedly and pertinaciously, to explore the logical implications of the circumstance. This is the dominating reason why they have been debated so impenitently and, relatively speaking, with such fullness, in the present chapter.

IV

Metaphysical Speculations

As we have noted, the speculations with which this concluding chapter is to be concerned, deal with the broader cosmical aspects of the *de facto* connexion between body and mind. The problem here is to endeavour to understand this partnership between thinking and neural process in the light of a universal perspective; and it is entirely possible that this philosophical inquiry, although it cannot overthrow the facts and the differences which have hitherto been narrated, may justifiably and appreciably modify those interpretations which seem appropriate to arguments that are content to remain 'brutally empirical'. Ultimately the problem here is that of the relations between spirit and nature (or, more accurately, the relations between spiritual nature and non-spiritual existence); and it is *possible*, although not very likely, that those cosmic problems might be solved upon quite general grounds without any special reference to the mind-body partnership. Even these general philosophies, however, must at least be consistent with our experience in this affair. If spirit meets (or greets) nature, it does so most patently in our flesh, and breath, and frame. Therefore, it has always been philosophy's practice to take side-glances, at least, at this psychophysical partnership, whether in our modern fashion or in some other; and there have been periods in philosophical speculation when these mysteries, in certain notable ways, took precedence over all others. The innovating Descartes, the God-besotten Spinoza, the Augustinian Malebranche, and the eminent Leibniz furnish shining examples during those active generations which

saw the conscious adolescence, if not literally the birth, of modern philosophy and science.

Manifestly, there is no space within the boards of a tiny manual for anything approaching an adequate survey of these far-flung issues. At the same time, keeping to our last, we are bound to adumbrate the problem in a more catholic fashion than heretofore, and the simplest plan is perhaps the best for our purposes. Throwing ambition away, let us attempt to consider some of the principal perspectives in which philosophers have been accustomed to regard the problem. In this way we gain something at least; and perhaps something not wholly trivial.

(a) *Materialism and 'Mechanism'*

The world of stars, and acids, and protoplasm, in a word the spatio-temporal universe, is at once a challenge to our thought and the home of a multitude of our activities. It was necessary, therefore, for a practical and intelligent animal to endeavour to understand it, partly from curiosity and partly from his desire to make it more malleable to his purposes. The reward of man's good luck and of his patient sagacity has been the acquirement of an amazingly exact knowledge of the events which he calls material; and it is the nature of every signal victory to beget the hope of a larger conquest. Just as Napoleon found *cette vieille Europe* too small for him, so speculative minds have hoped, most naturally and very frequently, that the well-laid foundations of our knowledge of material nature would support a structure, like in kind, that would contain the human spirit, and even the gods, with the same satisfying inevitableness as they show in their inclusion of astronomy.

This ebullient monism, so far from being reprehensible, is instead an acceptance of the comprehensive value of simplicity in any reasonable explanation. And since man has a body and

his body is material, this material foundation seemed plainly the simplest. Materialism, therefore, if a heady drink, is at least very naturally brewed, and is capable of very great refinements in the brewing.

In the absence of any adequate knowledge of physiology, however, this theory of the ultimate identity between material and mental process could be little better than hardy assertion. Such, for example, despite the magnificence of its plan, was the materialism of Hobbes's *Leviathan*. Motion, he said, *must* be the only reality, and that is all he was able to say. Even when a more adequate physiological theory was possible, as in the age of La Mettrie, we find little in the way of argument among many who profess to argue; and La Mettrie's own *L'Homme Machine* (eulogized by Frederick the Great) consists of a rather barren, if mildly provocative, recital of the respects in which mind is plainly dependent upon body, together with the assertion that since the faculty of feeling is only to be found in connexion with bodies, bodies must be supposed to have a sensitive faculty. To the first of these arguments one has only to reply, *Audi alteram partem*. To the second, *Non sequitur*.

In Huxley's account of 'Animal Automatism' there is more ponderable proof. Scientific physiology, it is there alleged, following Harvey and Descartes, has proved that the living body is a mechanism, thus bridging the gulf between matter and life. 'It may be assumed, then, that molecular changes in the brain are the causes of all the states of consciousness of brutes.' And if in brutes, then in men. Hence on the bodily side there is mechanism throughout the scale of nature; and if the sensations which accompany this mechanism in the brutes do not influence their actions any more than the steam whistle of the locomotive affects its machinery, so in mankind. In proof of the latter part of the doctrine, the gymnastics of the decerebrate

frog, and the somnambulistic behaviour of an ex-sergeant whose left parietal bone was injured during the battle of Bazeilles are cited as sufficient support.

This 'automatism' is the weakest part of the thesis. The mutilated frog behaves differently from an unmutilated animal, and there is a palpable difference between man's behaviour in somnambulism, or in a fugue, or in masked epilepsy, and ordinary human conduct. These differences must therefore be admitted on any reasonable theory, so that, if men are machines, it must at least be admitted that the sensitive part of the machinery (to say nothing of the intellectual) has definite, assignable, and quite special functions. We are *not* automata in the sense in which our automatic actions are *contrasted* with our voluntary conduct: but we may, nevertheless, be intelligent machines, and this intelligence might be a peculiarly subtle part of the machinery.

This, in effect, is the revised version of Huxley's doctrine. Animal bodies (so the argument runs) are intricate machines. Therefore, because of the law of continuity in nature, man's intellect and every human quality must belong to Nature's factory.

Sir Charles Sherrington's presidential address to the British Association at Hull in 1922, although guarded up to a point in its commitments, may be taken to be an up-to-date expression of this doctrine. Respiration or man's erect posture, it is stated, are delicate mechanisms, physical or chemical as the case may be. Even nerve regeneration seems mechanical; so do the other properties of the nerves; so also the 'mental parts' of the brain.

'The peculiar ways and tricks of the nervous machinery as revealed to us in the study of pure reflex actions repeat themselves obviously in the working of the machinery to which mental actions are adjunct. The phenomenon of fatigue is common to both, and imposes similar disabilities on both. Nervous exhaustion and mental exhaustion mingle.' Therefore, 'Of not a few

of the processes of the living body, such as muscular contraction, the circulation of the blood, the respiratory intake and output by the lungs, the nervous impulse and its journeyings, we may fairly feel from what we know of them already that further applications of physics and chemistry will furnish a competent key.'

It is true that 'despite many brilliant inquiries and inquirers' we are still at a loss to understand the specific growth from egg to adult or the predetermined natural term of existence. Yet 'it is as a whole, a single entity, that the animal, or for that matter the plant, has finally and essentially to be envisaged. We cannot really understand its one part without its other. Can we suppose a unified entity which is part mechanism and part not?'

Ultimately, then, the argument consists of two parts (1) the certainty that the body in great part is a machine together with the probability that its other reactions will later be proved to be mechanical; (2) the continuity of all natural process and especially the unity of an organic being. If an organism is truly, and not merely apparently, a mechanism even in part, it must be mechanical altogether.

In any strictness, the first part of this argument is at least unfortunately expressed. Mechanical action is action in accordance with the three laws of motion, and in this strict sense even chemical action, to say nothing of life, is not (at the present stage of our knowledge) explicable in these terms alone. Living bodies are mechanical in this sense when they fall from a height. Otherwise their complete 'mechanism' is a matter of faith. Even if we interpret 'mechanism' more tenderly, and maintain that the actions within a mechanical system depend wholly upon the spatio-temporal arrangements of the parts of the system, it is still very doubtful whether either chemistry or vitality could possibly fall within this rubric. The sting of the argument, therefore, if it is not effectively drawn by an invitation to explain

what is meant by 'mechanical', is threatened at least with an antidote; and, for the rest, we have a rather sterile series of bickerings on the problem whether the machine-like behaviour of certain animal processes is or is not a machine properly speaking, and whether its un-machine-like behaviour in certain other respects should or should not be explained by a subtler and unknown machine. Recent work at Utrecht has made it probable, for example, that man's erect stature depends upon principles also exemplified in a bean-stalk. This is very interesting; but even the bean may not be a machine; and man's erect stature, while characteristic of him, is not, in any obvious way, a condition of, or even connected with, his intelligence.

The 'mechanical' view of life, accordingly, has to become more moderate in order to be plausible. In this moderate form it states, firstly, that there is no vital substance, but that all organic materials may also be found in inorganic compounds; and, secondly, that the advance of our knowledge in these matters always depends upon exploring these physico-chemical connexions. For these more moderate assertions there is very good evidence, even granting that we know very little indeed of the precise chemical laws which are dependent (say) upon a *petite insuffisance thyroïdienne*. When this is admitted, however, the implications of the admission are still to seek. Since it is untrue, in general, that the behaviour of a chemical compound can be inferred from the behaviour of its constituent elements in their uncompounded state, it is highly improbable that the physics and the chemistry of organic elements could even 'explain' the behaviour of organic bodies; and if these bodies are distinctive *compounds*, we have to go to *them* to find what their vitality is. Experimentally, again, and in the order of Nature as we find her, abiogenesis, or the production of living things from dead ones, is still not known to occur. Pasteur's researches destroyed

any simple belief in 'spontaneous generation'; and although the evolutionary pre-history of our planet shows that life in its present form could not have existed here from all eternity, it is always at least *possible* to argue that a rudimentary species of organic synthesis existed from all time and acclimatized itself, so to say, in what we now consider the favourable environment of the earth's crust.

Accordingly, the stress of the argument is caught up into its second part. Its plausibility is borrowed from the postulate of continuity. And here again there are dubieties. We need not hold that Planck's Quantum Theory has demonstrated the existence of (highly specialized) *discontinuities* in physics; for these ideas are still upon their trial. The very fact, however, that they are at least serious physical hypotheses, shows how rash it would be for us to make a fetish of any particular dogma of continuity or to deny the characteristic differences between, say, organic and inorganic, or between organic and mental. Certain modern philosophers have made us familiar with the doctrine of 'emergent' patterns and qualities in Nature. At a certain stage, we are told, events boil over into a new order of being, as in the mutations of organic species. This is a very special kind of discontinuity since it is only under very distinctive conditions that any given mutation occurs. Nevertheless, when it occurs it is profoundly new; and it is explicable at its own rating and level instead of in terms of any other pattern that conditioned it. To say, as many do, that this conception of emergence is not an explanation but a confession of impotence is true in one sense, and in another false. If by 'explanation' we mean the exhibition of a manifest continuity, there is no explanation in 'emergence'. If, on the other hand, events are explained when the sequence of their history is methodically set forth, 'emergence' of this special kind may very well be explanatory. For it may be an authentic piece of history.

Summing up, then, we may say that neither matter nor mechanism in any ordinary sense, or in the sense which has been most fully and exactly explored in the magnificent development of physics, has shown itself capable in principle of that extension to all nature (including human nature) which materialism demands. To exhibit their arguments even as plausible, materialistic philosophers have to make immense drafts upon the principle of continuity, and in a fashion which the facts of life and of mind (to say nothing of others) do not seem to support. This is very often admitted, wittingly or unwittingly, by materialists or by 'epiphenomenalists' themselves. Plainly the principle of continuity, when interpreted in the sense that everything which has a history must be presumed to have the same fundamental properties throughout its history (whether it shows them or not), cuts both ways. This self-same contention is made by our idealists when they say that it is the end, not the beginning, which shows what has truly been continuous, and that since (as they believe) the end is spiritual, spirituality must be presumed to have been operative from the beginning and all the time. It is not only the idealists, however, who argue thus. The others do so also. What is commonly called materialism is often a doctrine of hylozoism. Matter is supposed to be at least infinitesimally animate in every part and pattern, so that continuity may be asserted everywhere, and be seen to embrace both the apparently inanimate and the apparently super-animate.

'The only thing that we can come to', Clifford says, 'if we accept the doctrine of evolution at all, is that even in the very lowest organisms, even in the Amoeba which swims about in our own blood, there is *something* or other, inconceivably simple to us, which is of the same nature with our own consciousness, although not of the same complexity—that is to say (for we cannot stop at organic matter, knowing as we do that it must have arisen by continuous physical processes out of inorganic matter),

we are obliged to assume, in order to save continuity in our belief, that along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves.'

In other words, after elaborate arguments which purport to explain where consciousness is *not* and what it *cannot* do, we are coolly informed that in reality it is everywhere, and are left to opine that, like everything else, it always does something wherever it is.

The logic of this discussion, more particularly in the applications that current controversy suggests, indicates, rather pointedly, the possibility of two alternatives to the usual varieties of materialism. The singularity of life and its connexion with mental process, on the one hand, suggest some form of animism; the signs of a profound revolution in the conceptions of orthodox physics, upon the other hand, suggest the tenability of some doctrine of 'neutral monism'. To these speculations we shall now turn.

(b) *Animism*

Animism is, properly speaking, a dualistic theory. Its dualism, however, is between life and the inorganic, not between mind and body. It appears, in short, to be a possible philosophical interpretation of neo-vitalism. This neo-vitalism differs from the old vitalism in so far as it admits that there is no evidence of a soul or vital principle as a *physical* entity, distinct from the body, yet animating its machine. On the contrary, neo-vitalism is content with the assertion that organic regulation is 'autonomous'; or that biological categories are 'irreducible' to physical. There *is* a gulf between matter and life, but within the vital series there is the fullest continuity between protoplasm and Newton's genius.

Clearly if this view is correct the empirical distinction between

the flesh and the spirit is declared to be fundamentally insignificant. The body-mind problem, for common sense and, empirically, for the relevant sciences, concerns the connexion between a *living* body and an *evaluating* mind. Animism is therefore opposed to the argument of the preceding chapters, and in its anxiety to refute 'mechanism' it seems to have neglected the mind-body problem itself. If challenged, perhaps, it would say that although there may be differences between 'minding' and simple living, these differences are far less momentous than the difference between being alive and being dead. Life has the potency of mind. Matter, in itself, has *not* the potency of life. Metaphysically, we have a fundamental dualism between living and dead with subordinate (although important) distinctions of level within the organic and within the inorganic series respectively.

If it is reasonable to hold, however (as our previous argument has attempted to show), that a spiritual or evaluating series is not biologically explicable (whether in terms of individual survival or of social fecundity and longevity), we cannot suppose that animism reaches the heart of our problem; and if we judge from the terms which are commonly used in support of it, there are no indications that the metaphysics of the theory fundamentally affects our interpretation of the evidence upon which this animistic conclusion rests. Dr. McDougall's *Body and Mind*, for example, is declared, in its sub-title, to be a 'defence of animism'. Its argument, Dr. McDougall declares, 'remains on the plane of empirical science, and, while leaving the metaphysical questions open for independent treatment, can look forward to obtaining further light on its problems through further scientific research' (p. 356). Yet he also declares that he has 'brought back Scholasticism and common sense'—scholasticism, I suppose, being a philosophy.

The result of his argument is not at all enlightening. For

a great part of the discussion, 'animism' is in conflict with, and overthrows 'mechanism'. If so it affects every lowly plant or animal as manifestly as it affects mankind, and it affects all organic growth, not peculiarly a nervous system. Yet, in its conclusion, the principal stress of the argument is laid upon the logical unity of a developed mind, or upon memory and conscious activities, not at all upon these lowly regulations. Indeed 'the part played by the soul in the development of the body and the control of the organic functions' is expressly declared to be 'a very obscure and difficult problem', although 'the principle of economy of hypotheses directs us to attempt to conceive that the soul may be operative in the guidance of bodily growth, either directly or by means of a general control exercised by it over some system of subordinate psychic agents' (pp. 372 and 373).

It is hardly possible to avoid the inference that the 'scholasticism and common sense' of this doctrine is very unlike scholasticism in its neglect of distinctions, and very similar to the less reputable varieties of 'common sense' in its determination to avoid essential differences by a single Gordian stroke. In our experience *l'âme* is not simply *l'esprit*, nor the animating principle the spiritual. And *this* contrast is indeed the chief.

(c) *Neutral Monism*

In contemporary philosophy the development of this doctrine was initiated by William James in an essay entitled, 'Does Consciousness Exist?' and continued most importantly in Mr. E. B. Holt's *The Concept of Consciousness* and in Mr. Bertrand Russell's *The Analysis of Mind*.

In the last of these, full advantage is taken of an asserted *rapprochement* between psychology and physics. Psychology may not indeed be capable of becoming entirely behaviouristic; but, at least, it has become less intransigeantly introspective. It does

not need a 'stuff' of consciousness, Mr. Russell believes, even if it needs conscious functions; and psycho-analysis with its exploration of 'the unconscious' has shown that the conscious quality of conscious process need not be of great moment in the process itself. *Pari passu* with this, physics is becoming less materialistic, less of the billiard-ball variety. Therefore, after argument, we arrive at the conclusion that 'physics and psychology are not distinguished by their material. Mind and matter alike are logical constructions; the particulars out of which they are constructed, or from which they are inferred, have various relations, some of which are studied by physics, others by psychology' (p. 307).

This brave *pronunciamento* is very scurvily fulfilled. In so far, indeed, as mental process may be regarded as composed of a procession of sensations and images, it may very well be the case that these subjective entities have also a physical order; for modern physics is at least consistent with the belief that our sense data, so far from being replicas of nature in some sort of psychical *milieu*, literally are features of nature herself, and that physical science is a 'construction' from this material. The subjective and 'mnemic' (or retentive) character here assigned to psychological process may similarly be described on these lines; and Mr. Russell's book may be said to offer a series of sketchy, but suggestive, incursions into their domain. It is a long step from this, however, to those logical, aesthetic, and ethical regulations which (for short) we call spiritual; and here Mr. Russell's argument limps sadly, nor is there any resolute attempt, on his part, to show how the organized systems of our 'minds' are related to those other organized systems which we call our bodies. To say that 'mind is a matter of degree, chiefly exemplified in number and complexity of habits' (p. 308), is to say extraordinarily little. To suggest that 'it is probable, though not certain, that

mnemic causation is derivative from ordinary physical in nervous (and other) tissue', is only to croon materialism very softly; and to harp upon 'constructions' when the question is whether the constructions are fact or fiction is nothing like a final answer.

On the material side, it is not at all evident that the relinquishment of 'billiard-ball' materialism has any essential bearing upon the mind-body problem. Messrs. Russell and Whitehead believe, indeed, that modern physics is not compelled, as the older physics was, to deny that sense-data may literally be motions in space-time. The Quantum Theory, again, as we have seen, may have enlarged our freedom with regard to continuity and discontinuity; and the immutability of the atom is now regarded more properly as an exceeding stubbornness. A certain emancipation in those directions, however, while it stimulates our impulses towards unification, cannot be said, as yet, to have any specific implications concerning the mind-body problem; and it is only by a valiant piece of effrontery that the services of the theory of relativity can be enlisted in this regard. A thoroughgoing doctrine of relativity in space and time implies that the spatio-temporal determinations of any spatio-temporal system must be regarded, not as dates and places in absolute space or time, but relatively to other space-times (although according to a systematic correlation). This must also apply to the observations of any observer whose perspective is governed by his space-time; but it applies in the same sense to his clocks and to his measuring rods, so that the *mental* character of his observations has nothing to do with the point.

Pictorially, indeed, material events may seem to lose something of their rigidity in these speculations, and picture-thinking takes comfort in the thought that an invisible energy may be the reality of which 'matter' is a gross, macroscopic translation. Even before the contemporary revolution in physics, these ideas were

prevalent. They appeared in the crude form of a doctrine of animistic energetics (like Ostwald's Energetics in substance), which was little more than a free translation of hylozoism. They were also argued, far more subtly and profoundly, by M. Bergson, whose contentions, whether aided or not by the new revolution in physics, are both original, comprehensive, and notable.

(d) *Mind-Energy on M. Bergson's Theory*

In M. Bergson's philosophy we find a bold, subtle, but intentionally scientific account of the mind-body relation together with a metaphysical, or cosmic, extension in harmony with, and in a sense wrung out of, the narrower scientific problem. In the mind-body partnership, the mind, for him, is essentially creative tension; and this, of the one part, is memory (in the sense, not of a 'storehouse', but of effective integration) and, of the other part, radical novelty in creative action. From this standpoint, he avers, the mind's actual relations to the cerebral activities are thoroughly intelligible. On the one hand, the mind is *more* than its brain, overflowing the brain, selecting from among its motor responses, and using those organized channels of response for novel adaptations in its creative advance. The brain is a motor automatism deposited by creative process just in the way in which an originally attentive process tends, like the trained musician's fingers, to be drilled into automatic movement; but this motor automatism is guided and employed by the fundamental tension of our minds. The mind is active *tension*, these automatisms are the instruments of its *attention*, inserting mental activity in the solid body of the world.

M. Bergson shows very fully that all the facts scientifically ascertained chime in with this interpretation. The most significant of them, and the best understood, are the facts of aphasia. There are definite brain-lesions here, but these do not show the

brain to be a storehouse, much less a workshop, which consciousness reflects in a parallel series.

'The sufferer from aphasia becomes incapable of finding the word when he wants it; he seems to be feeling his way all around it, lacking the desired power of putting his finger on the exact point he wants; in the psychological domain, indeed, the external sign of strength is always precision. But the recollection, to all appearance, is there; and sometimes, when replacing by paraphrases the word which he thinks lost, the patient may actually bring the right word into one of them. What has become enfeebled in his case is that "adjustment to the situation" which the cerebral mechanism is contrived to secure.'[1]

There is no question of parallelism here. The creative tension of mind uses a cerebral path for a summed and summoned motor response. Instead of point-to-point correlation, the *whole* tension of mind employs the relevant integration of its associated automatisms of motor habit.

M. Bergson's first step towards generalization may appear straightforward. We think, in our own case, of consciousness and of cortical process; but the latter is an elaborate development of a nervous system which may be incomparably simpler, and the former, if it is truly creative tension, must also have much simpler forms. *In principle*, therefore, consciousness is coextensive with life; and life itself solves the problem. Life taking the path of freedom and movement is found at its highest pitch in man and in the subtler, more mobile, mammals; their freedom asserts itself creatively in a relative, although subordinate, automatism. It may also, as in plants, take an unmoving nutritive form; and there we have a relative lack of creativeness. A wider generalization leads to a universal cosmology. Matter is inertia, geometry, necessity—in a word, space and rigidity; and these in their turn are deposits and canalizations swept out in the creative advance

[1] *Mind Energy*, English translation, p. 52.

of time—the form of all consciousness and the very stuff of active process. The material world is an impoverished set of perceptions in which the unity of creative process is split up (by a fiction) into a mechanism without true history, and into a spatial framework whose order is but dead repetition. If activity is reality, there is no dead matter. There is only excessive torpor and habituation in certain cases—a relaxation of tension into what appears to be (but is not) an iron, inert unchangeableness.

If plants could speak, they might perhaps complain that they are very active although they do not move; and that there is no torpor in the mutations of botanical species. If inorganic things could speak, they also might complain that they are earlier in all prehistories than the life-tension which, on this theory, has deposited them. If space could speak it might refuse to admit itself a dessicated and atrophied time. And geometers (who can speak) retort effectively to M. Bergson's criticisms of spatial continuity. The severance, again, between sensitive and evaluating process is here expressly done away with; and M. Bergson's theories, like any others of the same enormous scope, bristle with perplexities. Nevertheless, the core of his argument gives an intelligible scientific account of the scientific problem, and the argument itself is not incongruent with a wide philosophical development.

(e) *Idealistic Theories*

Philosophical idealism takes several forms, and the connexion of many of these with the mind-body problem is more tortuous than apparent. A few representative opinions of an idealistic cast may, however, be considered here.

1. *Subjective idealism.* This is the doctrine which alleges that every mind is imprisoned behind its own bars, and cannot even peep

outside. According to this theory, everything of which any of us can think has the same dependence upon and relativity towards, our own private minds as the sixpenny-sized disk which is the appearance the moon presents to our senses. We know only our own sensations, it is alleged; or, at any rate, our own private appearances or phenomena.

It may be doubted whether this opinion could be seriously entertained by any competent philosopher. It is often expressed, however, by writers who accept it as philosophy's proper message; and scientific writers are peculiarly prone to this hasty inference. Huxley's epiphenomenalism, for example, as we have seen, professes to be based upon the proved automatism of the *sensory phenomena*, which we call bodily movement; yet he also asserts that these, being dependent upon the varying nervous constitution of individuals, are ultimately *the* phenomena which belong to, and vary with, particular men and women. Since these very nervous systems, however, are themselves phenomena (and therefore as thoroughly 'subjective' as any others), it is hard to follow, or to swallow, this argument.

According to the argument, our own brains would be our own private appearances, if we could observe them; and since people in general do not observe their own brains, it follows that, in general, they do not have any. It is also alleged, however, that these cerebral phenomena (which are *not* phenomena) are also, by the laws of nature, the conditions of all our experience. According to Huxley, *un*phenomenal brain molecules are also 'ideagenous'.

Such theories, quite plainly, while acknowledging an intellectual conviction that matter is sensorially phenomenal, and that sense phenomena are truly mental, proceed thereafter to treat these phenomena as if they could continue to exist when no one perceived them, and as if they formed a public world totally inde-

pendent of any one's sensory peculiarities. And this is utterly illegitimate.

In general, therefore, the lip service thus rendered to mind is merely the salve of a troubled intellectual conscience, and is of no more importance than any other conscientious reluctance that is not intended to make any practical difference. If the view is pressed, the precise relation of this 'mentalism' to 'mind' becomes very hard to decipher. Often we are told that mind itself is a set of peculiarly intimate sensations connected with the less intimate 'external' sensations. It is a sequence of ultra-private feelings. This is a travesty of mind, and it explains neither the difference nor the connexion of the two series of sensations. In particular, it does not explain how or why the 'external' phenomena belong and are relative to the 'inner' ones. Nevertheless, a pure phenomenalism of this kind which, like Hume's, asserts that all our knowledge is a flitting panorama of pains and pleasures, sensations and images, is the most consistent scion of this tribe; and it might almost be plausible if it did not confuse between successive ideas and, say, the idea of succession. In other words, it might be intelligible if it could consistently admit its own truth.

It is often held that Berkeley as well as Hume was a 'subjective idealist'. This is not the truth; for although Berkeley held that physical things were collections of sense-ideas, he did not hold that our own selves, or the selves of other men, or of deity, were ideas at all. In effect, Berkeley substituted a dualism of spirits and their ideas for the Cartesian dualism of mind and matter. This may seem to be a bridgeable dualism since ideal things seem plainly connected with minds. When we ask Berkeley, however, what the connexion is we are only told that spirits *have* ideas in the sense that they *perceive* them; and that God creates sensory ideas *in us* after the same fashion as we create dream-images and day-dream images *in ourselves*. In short, all 's to be done.

2. *Metaphysical rationalism.* A philosophy of this species endeavours to deduce the character of the universe from the circumstance of its intelligibility. The universe (it argues) could not be logically thinkable unless it were rational in its character and made up of the stuff of rationality.

Here the inference is precarious, and the connexion with the mind-body problem highly doubtful. So far as the universe is intelligible, it must be capable of being understood by a logical mind; and if minds could understand either themselves only or something in their own image, it would follow that a rational universe must in this sense be mental. The world would be reason's epiphany. These latter assumptions, however, seem themselves to be devoid of any reason. Empirical minds—your mind or mine—do not seem to know themselves very well, and commonly suppose themselves to know certain other things a great deal better. This opinion, to be sure, may be mistaken. It is not, however, downright impossible, and it would have to be impossible *in principle* if this argument, in principle, were conclusive. Aristotle and many others have indeed declared that when perfect understanding comes, mind and its object are one. This belief, however, is no self-evident axiom. It may even be the obscure progeny of two mistakes, the mistake that knowledge is a kind of action, and the mistake that, in some way, only like can act upon like.

The application of this philosophy to the mind-body problem is at least equally perplexing. If reason is indeed a skyey and a noble thing, and if we know upon metaphysical grounds that it governs, connects, and permeates the entire universe, then we must conclude either that matter is better than it seems, or that the phenomena we call material are not really material at all but half-understood appearances which, when truly understood, would have a very different aspect. The latter conclusion is the

more usual; and we are informed, by different voices or even by the same interpreter, that matter (as we call it) is a shadow (or a petrifaction) of spiritual process, that it is a kind of evil inertia within spirit itself, that it is an appearance intellectually corrigible (although with effort and toil). These general considerations, in their several ways, would dematerialize the world of matter (as we are accustomed to regard it), just as they would de-spatialize or de-temporalize that (apparent) spatio-temporal order whose range and plan is something given to logic, not consequent upon any logical principle. By the same arguments, however, this idealism might (and often does) de-psychologize our minds or de-animize our vitality. It is not apparent, therefore, how precisely it affects the mind-body problem if either mind or body is taken to conform, in any approachable measure, to the interpretation which we usually put upon it. For this reason, much idealistic writing sounds like the frankest materialism —until we reach the reminder that *somehow* everything is bathed in logic and encompassed with reason. And idealisms 'of the left' often *are* materialisms.

3. *The primacy of spiritual values.* Idealism is often supposed to be a heartening theory, bringing hope out of barren uniformities, and quickening the dry bones of relentless science. If so, the emphasis is rather upon the *ideal* than upon the *ideational* part of the theory—upon the scope it gives for aspiration rather than upon the presuppositions of intelligibility. To be sure, there is a certain connexion, and perhaps an authentic tie, between these twain. If the logical constitution of the universe presupposes its permeation by mind, then it is plain that this permeating mind *may*, at least, govern in terms of an order of dominating values, whereas matter, blind by definition and intrinsically worthless, would seem incapable of becoming the instrument of any solid aspiration whatsoever.

The belief, then, that our worthiest aspirations belong to the centrality of the universe, is integral to most idealisms, and enables these theories to put a new face upon the apparent vicissitudes, the seemingly precarious tenure, and the ephemeral contingency of that which we find the best in our existence. Here, plainly, is a direct connexion with the mind-body problem; for this problem, as we have seen, is most crucially the debate concerning the potencies of spiritual regulation in a partnership between mind and a certain living thing. Any theory, accordingly, which believes itself capable of proving the dominance of spiritual values in the cosmos may reasonably be expected to check its conclusions at the meeting-point of flesh and spirit. The physical universe, it is true, need not be supposed to be an immense living thing—the very body of deity—as Plato suggested in his *Timaeus*. Human values, on the other hand, cannot be accepted as true and genuine values unless they are excellent in their own right, not simply as qualities in which humanity has a certain natural interest; and the partnership between a mind and its body is precisely that union in events wherein values may govern a spatio-temporal order.

Yet the lions in the path of this metaphysics are formidable and resolute. In the mind-body partnership as we find it, the limitations of this possible government in terms of values are stubborn and brutal. What we find ourselves capable of performing in our experience, while it is much and our duty, is also, in other ways, oddly tiny if the universe be fundamentally spiritual. Even patience and fevered excitement have the straitest bounds; they may be overborne by hunger, or pain, or foul air, or a speck of poison; and they have all a natural period which, in the perspective of cosmic process, is as nothing at all. To be brief, the special phenomena are not always encouraging, and the attempt to push the general problem into the very palladium and nucleus

of the universe has its own highly general dangers. Many of our special difficulties may indeed be overcome. In an ampler theatre, the refractoriness of our little stage may be a thing to smile at. With eternity on our side, we may be right in refusing to accept the utter disaster which appears, so very often, to destroy finite hopes. On the other hand, neither the histories of nebulae nor the facts of organic evolution appear to suggest very strongly that 'value determines existence', or that everything exists for the sake of conserving its values; and our faith in the perfection of the universe is disturbed at the outset by the *need* of the All for its own perfectibility. If perfection is the truth, why should there be lack of perfection now? Or any need for betterment? And if perfection be eternally or timelessly accomplished then everything is for the best whatever happens; and the uttermost degradation of humanity no worse a state than what appears to be its most splendid achievement.

4. *Spiritual pluralism or panpsychism.* The belief that the universe is spiritual is susceptible of many interpretations. Thus what may be meant is that values *count* in the order of things or dominate the order of existence. If so, there may nevertheless be matter, space, and time, for if a spiritual being, or hierarchy of such beings, governed and controlled the material order for spiritual ends, either creating it out of nothing or bringing order into chaos and light into darkness, the intrinsic blindness and worthlessness of material stuff would be used for righteous purposes.

What may be meant, however, is that nothing but spirit can exist. If so, and if the universe be indeed a unity, it may either be a single substance having spiritual differentiations, or a plurality of substances united together. Again, if the universe is not an integral unity but of a looser structure (although retaining the formal connectedness of any thinkable series) its constituent

members may all be spirits. Spiritual pluralism maintains that reality is a colony of spirits.

If we ask what reasons may be given for this opinion we are answered somewhat as follows. In the first place, there *are* spirits; for there are at least our own. Again, there *may* be nothing else; for the world, to each one of us, is something that each of us represents; and it may be nothing more. We may represent it as material, although it is in fact a spiritual colony. In the second place, this doctrine does not compel us to hold that every 'thing' (as a grain of sand, or a pond, or a cup and a saucer) is a spirit. The divisions among such things are arbitrary and macroscopic, gross interpretations of our grosser senses. The pond, in reality, may be full of animate things, as when it contains, in Coventry Patmore's language, 'a torment of innumerable tails'. In other words, the ultra-microscopic constitution of matter may be made up of these spiritual entities. Electrons (or whatever is more ultimate than electrons) may be spirits. Even space itself may be only an appearance or well-grounded image, imaginary because it is not the truth, but well-grounded because it is an imperfect reflection of genuine logical relationships.

The theory accordingly *may* be true. To prove that it *must* be true, we should have to show that nothing but a spirit could exist. In proof of this, the principle of continuity may be invoked. Spirits do exist. Therefore, everything that exists must be continuous, or of like nature with them. A bolder line of argument is given by Leibniz, Lotze, and McTaggart. Putting roughly what these philosophers put so carefully, we may say that, according to their contentions, the unity of the universe is such that nothing less than a spirit could sustain itself integrally within this unity.

This bolder form of the argument implies a most pervasive and

a most effective harmony within existence, and is consequently very slenderly connected with the reasons which make pluralism attractive to those who advocate it on the grounds of free-will, the independent autonomy of finite selfhood, and the like. Metaphysically speaking, however, it is stronger than the other; for the other, at its best, is content to exploit a possibility, while the bolder form of the argument claims to be necessarily true.

If either of these theories attempts to preserve contact with the apparent lessons of our experience it has to maintain that spirits exist with a spirituality of different grades or levels. Thus the spiritual units which we usually suppose to be the atoms of lifeless matter show the dogged regularity of a postman in his working hours—only their hours are always working hours, and they never fall sick or resign. The cells of living organisms show another level of spiritual existence and in the conscious determinations of psychical personality we find a level still more obviously spiritual. These are the chief broad divisions that we find; but theoretically, of course, there might be many sub-levels, and perhaps an infinity of major levels with which we are not acquainted.

It may be doubted, perhaps, whether this assignment of spiritual or mental properties (even of a low order) to beings which do not show any signs of this order *at all* is helpful to us—although, of course, if it *must* be so, then it *is* so. Certainly it is not empirically helpful, for the materialistic habits of certain of the lowlier 'spirits' appear to be entirely incorrigible. The colony seems largely composed of spirits for whom it is too late to mend their ways. Such a universal pluralism of spirits, however, obviously generalizes the mind-body problem. In our mind-body systems we find a hierarchy of spirits, perhaps with the mind (as we call it, and apart from the perplexities of 'multiple personality') as a dominant spirit having beneath it officers of many ranks, and

ultimately an army of private soldiers (which are the electrons that compose the cells of the organism). This colony, in principle, although not necessarily in detail, is the microcosm which mirrors the macrocosm of all existence, and the special problem of body and mind appears in its universal perspective.

(f) *Parallelism*

As we saw in the last chapter, a parallelism that is 'brutally empirical', and nothing more, is a simple absurdity. It remains to consider, therefore, whether this theory in a metaphysical setting becomes tenable.

M. Bergson argues that this is for ever impossible. Metaphysically speaking, he maintains, the parallelism, if it existed, would be between the order of ideas or phenomena on the one hand, and nature realistically regarded upon the other. In terms of the first series, the brain is one phenomena among others, and cannot therefore be equivalent to the whole of which it is a part. In terms of the second the brain is but a part of nature and so is incapable by itself of playing the part which this theory assigns to it. The theory accordingly is based upon a fallacy or paralogism. It sustains itself alternately by materializing the order of ideas and by spiritualizing the order of natural realism (see *Mind-Energy*, concluding chapter).

This criticism presupposes that a part of any system cannot adequately mirror the whole of that system, and that the mental order is to be regarded simply as a notation of representative equivalents. Neither of these presuppositions is necessary, however; and we may conclude that parallelism is not self-contradictory unless it entangles itself in quite gratuitous assumptions. Parallelists, it is true, often do entangle themselves in this way, but they need not.

The mere circumstance, however, that a theory is not positively

self-contradictory, is no proof of its truth. Let us consider, therefore, what positive reasons parallelists may allege, more general than, and additional to, those that were examined and found insufficient in the last chapter.

Simply to allege that every material existence (or every property of material existence?) *may* or *does* have a mental side, and vice versa, so that there is, *de facto*, a mind-body parallelism throughout nature, is mere crude hylozoism, and no argument at all. To save a theory, properties are assigned, say, to stocks and stones, which stocks and stones do not seem to have: and (if mind means anything significant) directly *contrary* to the properties which stocks and stones truly appear to have. Again, if the theory attempted to avail itself of a doctrine of grades and levels in Reality, similar to those accepted in the theories of spiritual pluralism, yet in the last analysis simply parallel (although completely so in all details), it would again run contrary to all that we take to be plainest. These levels, as we find them in nature, are highly specialized. Only certain things are alive; only certain living things are conscious. The differences in these levels again seem to indicate, at the lowest rating, a refinement and increased dexterity of behaviour. A sensory mechanism, if there were one, would be more delicate than an insensitive. According to parallelism of this variety we should have row upon row of gratuitous reduplications, corresponding with precision in every pose and feature: yet all to no purpose.

Nevertheless, certain positive arguments are adduced, of which the principal seem to be the following:

In the first place, after a fashion reminiscent of Kant, it is argued that things-in-themselves, whether minds or bodies, are, in themselves, unknown and unknowable. Our problem, instead, concerns the relations of our *representations* of 'matter' to our *representations* of mind. Now representations signify and do not

act; and signification itself consists of a recognized correspondence between symbols and what they indicate. Therefore the truth, in all these matters, is just a correspondence of signs.

The reply to this seems plain. When we signify matter or mind respectively, we mean to signify *realities*; and our questions concern the relations of what is signified, not of the signifying signs. Thus if the sign of a cause is not itself a cause, it is still the vehicle of our knowledge of *causes*. Psychophysical parallelism purports to deal with a certain correspondence between the things signified; and its denial of causal relationship between these signified orders would be meaningless if there were no things or causes at all but only signs.

Secondly, the testimony of the Weber-Fechner law may be adduced. The facts here are as follows: Within the central and more accurate part of any discriminable series of sensations (brightness, say, or weight) it is found that the stimuli, if they are to yield a discernible difference in sensation, must be increased proportionately (although with a different constant proportion in the case of different series of stimuli). If we assume, then, that the series of discernibly different sensations is increased by equal increments, we reach the conclusion that any given sensation-series is an arithmetical progression, while the corresponding series of stimuli forms a geometrical progression. The sensation-increments are thus the logarithms of the increments in the stimuli. The generalization of this is a *universal* mind-body parallelism.

This argument is not at all convincing. The mind is very far from being a mere series of sensations, and it is improbable that the increments in these sensation-series *are* arithmetically equal. Again, the law holds between external stimuli and psychical reactions. Here a complicated neural process intervenes; and this, in all probability, is a sufficient *cause* of the phenomenon

so far as it is accurately reflected in the theory. There is no ground for supposing a simple, *causeless* parallelism.

Thirdly, and more importantly, parallelism may be based upon a certain doctrine of 'inner' and of 'outer'. Our minds are what we experience in its inner being. Other beings can observe only its external aspect. But 'outer' and 'inner' are the same thing differently regarded. Therefore they can *only* correspond, and could not possibly interact; for *aspects* of things do not influence one another. Only things have this influence. Furthermore, this doctrine may readily be generalized throughout the universe. For everything has an inner aspect, and therefore it *may* be capable of experiencing or 'enjoying' this inner aspect by itself alone.

The objections to this theory, however, are very serious. The doctrine, of course, is entirely untenable if it is expressed, as it often is, in terms of philosophical phenomenalism. Phenomena, precisely because they are mere appearances, are just what they seem to be; and they seem to be just what they are. 'Inner' and 'outer', therefore, being manifestly *different* appearances, cannot possibly be *also* the same. On a non-phenomenalistic doctrine, however, 'inner' and 'outer' might very well, in theory, be different manifestations of the same reality. And this is what parallelism, in this form, most properly asserts.

Objections, nevertheless, still rain in upon us. Although we cannot observe our cerebral hemispheres in action, we can observe by the ear, for example, something that passes within our own bodies; and a surgeon can observe a great deal of this 'inwardness' in his patients. Either, then, the words 'inner' and 'outer' have to be taken in some metaphorical sense, or 'outer' is understood to mean 'observable through a sense appropriate to external objects', and 'inner' to mean anything appropriate to an 'internal sense'. On the latter interpretation (which is

the most usual and the least improbable), what this 'internal sense' gives us as a datum for our interpretation is really a certain series of organic sensations. These are the bodily facts which we can observe in our frames, and it is mere mockery to suppose that this private somatic resonance *is* the human mind. Again, why should observation from the outside and from the inside make so momentous a difference? If we observe truly, do we not observe things as they are? If knowing a thing were indeed participating in its existence, and if distance in space precluded this participation, the theory would indeed have a solid basis—for a part of it. But the rest would dissolve. For, in this case, we could not know anything outside us. *All* knowledge would be inner; and the parallelism, becoming quite different, would be between the known and the unknowable.

The imposing edifice of Spinoza's philosophy, with its attempted demonstration of parallelism *a priori*, and by the sublimest machinery of metaphysics, may be taken as a precellent example, of the possibility, at least, of parallelism as a truly philosophical contention. Spinoza's parallelism, however, while strenuously asserted, is dubiously consistent either in principle or in detail. A strenuous monist, Spinoza asserts that the universe itself is but a single substance: and this is God. God, however, has two attributes, Extension and Thought, which correspond point for point, although they cannot intermingle; or rather he believes in the existence of an infinity of attributes, although extension and thought are the only ones known to us. This, in itself, is disturbing, if not positively inconsistent. The integrity of the attributes seems to partition the divine unity, and Spinoza unites them by his unsupported assertion that both are the attributes of deity. Again, the fact that only two of them are known, seems, on the theory, to be an odd empirical limitation. If the attribute of thought is not confined in principle to the knowledge of exten-

sion, why should it be so confined in fact? If it is so confined, must there not be some further reason than the circumstance that both are attributes?

Again, in the end, Spinoza's parallelism seems to be imperfectly parallelistic, despite its uncompromising assertions. Regarding the human body as a temporary organization of harder and of more fluid parts, he gives us in detail an account of the way in which our sensations and passions correspond to the posture and to the vestiges of this spatial configuration. The sensory side of the body, however, is no explanation of our knowledge of things which are not our own bodies. Here we are left to suppose that our experience of a bodily effect is also a knowledge of its cause. Moreover, there are apparently insurmountable difficulties concerning Spinoza's view of the intellect. He asserts (contrary to what seems the correct opinion) that sensation and passion are only confused intellection, and that error or confusion contain nothing positive (and therefore are but partial intellect, like the knowledge of a conclusion without any knowledge of its grounds). Yet he also maintains that there is an immortal part of intellect, not affected by the body's corruption; and he believes that the thoughts or ideas which reflect our particular, private bodies, are also capable of encompassing *all* body and all existence. In short, the scholastic opinion that the intellect has *no* bodily counterpart (although the senses have one), seems to intrude, without Spinoza's knowledge, into the very heart of his reiterated and official parallelism.

(g) *Philosophical Dualism*

The conclusion of our previous chapters has been that mind and body, regarded as going concerns, are characteristically different from one another, however closely they may be allied; and that, in all probability, these partners are capable of mutual

influence or interaction. This implies a dualism of some sort between a thinking mind and its living body. The remaining question, accordingly, is whether dualism of any sort is a term of reproach, philosophically speaking, or is truly a possible metaphysics.

At the risk of a certain repetition, it may be permissible to state once again the opinion, empirically probable, whose metaphysical implications and possibility are here to be considered.

In our view, the order of mental regulation is truly *sui generis*, because, in a wide sense of the term, it is either spiritual or capable of becoming so. By a spiritual order I mean an order which is capable of maintaining and directing itself in terms of value and for the sake of values. These values, I assume, are what they declare themselves to be. They are ends which *ought* to be sought, not 'tertiary' or third-hand projections from something more fundamental than value and part of our biological constitution. These ends, moreover, justify themselves, and impose their own proper spiritual obligations without reference to any further court of appeal.

Investigating this order a little more minutely we find that truth, beauty, morality, and happiness justify themselves in this fashion, and that they ought to be sought for their own sakes. If any one of them, in its turn, should be foregone (as pleasure may properly be subordinate, say, to the exacting domination of science or of art; or, again, as scientific curiosity ought not to murder or debase the objects of its interest merely to note their reactions) the reason is always some greater and worthier excellence. The requirements of this spiritual order may, for a sufficient spiritual reason, decree the renunciation of life itself; and in general it *uses* (and ought to use) the life which is subordinate to it.

This spiritual order and ordering, being properly autonomous,

cannot in its turn be a simple consequence of any other principles whatsoever; and in a being whose spiritual capacities are developed and discriminating, there is no question but that life is subordinate to this other regulation, and not conversely. The straightforward reply, of course, is that only a few human beings ever attain these finer levels of spirituality, and then not for long; that most are nasty and carnal during a great part of their existence; and that the majority of the other animals are most unspiritually brutish, not (as some suppose) more virtuous and less unlovely than ourselves. Again, it may reasonably be contended (more subtly, it may be, but perhaps truly) that our spiritual functions may also be carnal. For love is not unfleshly, nor beauty incorporeal, and morality would not be what it is if there were no sexes and no such thing as alcohol.

The first of these contentions, we may concede, would be conclusive if the spiritual partner in this relationship never appeared except when spirit is most finely touched. There is no need, however, for supposing so. Spirit shows itself most clearly, perhaps, when it is at its best, but it manifests itself also, in an entirely significant fashion, in its gropings, its perversions, and its mere routine. To act according to preference, however unwisely, and to attempt to think, without achieving more than muddle, are instances of this very type of process. If spirit is an honorific title the reason is, not that it is always honourable, but that it alone has to do with honour. And so in other instances. This order, moreover, is very widely spread. It is not true that all men are equal, but all (even defectives) seem to participate in this order; and many of the other animals, in their own way, seem to do so also.

The second contention, again, is in reality no objection at all. If it is the use of our bodily existence that concerns us, in great part, in this matter, we need not be surprised if this partnership

between spirit and flesh is frequently of the greatest intimacy. Beauty and sentiment and moral loyalty may therefore, without contradiction, be admitted, often, to be as carnal as they seem. That logic is carnal seems always more doubtful. If we were aquatic animals, or flint-men in Saturn, or entirely disembodied, there appears to be no reason for supposing that we should ever understand two and two to be anything else than four. In short, we should discriminate here between what is authentically incarnate, and what is not.

On the other hand, it seems impossible to deny that there is an intrinsic connexion between the capacity for being spiritual and the capacity for being conscious. Spiritual beings, so far as we can see, cannot be for ever unconscious. The partnership between spirit and body, therefore, while it need not be based upon the utter disparity between mere vitality and consciousness, must be held to be connected with this important distinction. As we have seen, certain features of our consciousness may well be 'explained' biologically. What seems inexplicable, in any serious sense, according to the canons of this explanation is the evaluating order itself ; and physiological discoveries, so far as they have proceeded, do not appear to imply any fundamental modification here. There *are* neural correlates for our sensori-motor functions ; and this correlation, in all probability, is relatively highly specific. For the rest, there is no evidence of specific correlation. In our experience, if we are to be conscious *at all*, our cerebral hemispheres must be in working order ; and our sensations, images, and executive actions appear to be dependent upon them in detail. Otherwise, there appears to be an effective interaction, and not correspondence, between spirit and living process.

As we have seen, it is possible, to be sure, that general metaphysical principles should be strong enough, not indeed to over-

ride, but appreciably to modify, even the most probable of the conclusions obtained through a provisional neglect of them. On the other hand, we have also observed how hazardous and dubious it is to attempt to legislate *a priori* in these affairs. Perhaps even we should be, if not satisfied, at least not ill content, if any theory which seems probable according to the empirical evidence, should also be capable of vindicating its *possibility* in a metaphysical regard. This seems the truth regarding dualism. Dualism in metaphysics is a species of radical pluralism, and the possibility of philosophical pluralism stands or falls with the contention that, in theory, things utterly distinct may be *related* without thereby *becoming one*, and without revealing, by the mere fact of their connexion, that they have not the fundamental disparity that was claimed for them. On this point of logic, pluralism (and therefore any sub-species of it) appears to be right. It is another question, of course, whether there are in fact essentially disparate orders of existence in the universe, and if so, how and in what respects this disparity is revealed.

The dualism of Descartes (which is still the most finished expression of a dualistic theory in philosophy) asserted that the material world formed a single mechanical system. A plurality of free created minds, however, was capable of directing certain portions of this vast mechanism; for each several mind could affect the pineal gland in some particular human brain, and so could direct its own particular human body. These minds (human, not animal) were held to be composed of a stuff totally different from physical stuff. They were unities of *unspatial* stuff, whereas the essence of matter was to be extended. The apparently utter pluralism of these spiritual units was tempered, in Descartes's theory, by the dependence which all of them were declared to show in relation to God (or the infinite); and Descartes believed that, despite his dualism, he was able to show the in-

timacy of the union between mind and body more convincingly, and at the same time more accurately, than any other philosopher.

This general thesis seems in part to be unnecessarily trenchant, in part to provoke further inquiry; and I shall conclude our brief inquiry by considering some of the more salient relations of our discussion to each of these portions of Descartes's dualism.

Regarding the first of them, we should say that this radical severance between a single mechanical universe, on the one hand, and a pluralism of minds, upon the other hand, seems dubiously grounded. The disparity which is found in our mind-body partnership is a disparity between spiritual and biological. Biology, however, need not be 'mechanical', and consciousness, perhaps, need not always be spiritual. The most probable theory would appear to be that spirits in their partnership with living bodies exhibit the mutual influence of two orders which are themselves members within a wider metaphysical pluralism. This is consistent with the opinion that the distinction between spirit and body is more critical and far reaching than any other division in the pluralism of existence.

It is more doubtful, I think, whether the difference, in *substance*, between mind and body, needs the modification which many of Descartes's critics were (and are) anxious to assign to it. Thus we are frequently told that any disparity of *function* (as, for example, the distinction between spiritual and material function) does not necessarily prove a disparity of *substance*. The problem here, however, turns upon the definition of substance. If 'substance' is held to imply the continuity of a certain spatial pattern, and if bodies only (not minds) are spatial, then minds, by definition, are not substances. It is not evident, however, that spatiality is essential to substance; and, if not, the argument falls. For either we are entitled to impute substance whenever

we find a certain continuity, unity, and integrity of events, or substance is but a name for this continuity, unity, and integrity; and on either hypothesis, minds might be substances.

It may be objected, to be sure, that minds are not really non-spatial; and, again, that they are intermittent, not continuous. In the former case, however, they might still be substances, and on any ordinary theory, they would be substances if they interacted with their bodies. It is the absence of spatiality that is held to be an objection, not its presence; and this absence seems, on the whole, to be probable. Certain sensations and certain images (e. g. visual or tactical ones) seem plainly to be extended and therefore spatial. Logic and sentiment do not appear to be. In short, space seems to have nothing to do with spiritual regulation, except in so far as spatial things are its instrument.

The problem of intermission is perhaps more difficult. A substance, we say, must at least be a continuant in time. Otherwise, it is like a series of flashes and not a thing. Accepting this, we should say that if the temporal continuance of minds cannot be maintained without impossible overdrafts upon an unverifiable theory of subconsciousness, minds are not 'substances' in any useful sense. It does not follow, however, that they are 'flashes' of, or from, our bodies. Some other and spiritual reality might be the 'substance' of them; and in any case if Peter asleep is not a mind at all, Peter awake is the same Peter as he was the day before.

The second, and wider, range of questions that arise out of dualistic theory, is as provocative as any philosophy can be. If these millions of minds exist, how do they come into being, and how are they united, if at all, in a spiritual realm? When minds and bodies are going concerns, their partnership, if it is singular, does not appear to be in any proper sense a mystery. The origin of a mind, however, is another story, and even if all origins are,

in a sense, mysterious and matter for speculation, the birth and the growth of a mind after a purely physical process is surely a mystery, if spirit and matter are truly different. Creationists as well as traducianists have to admit that minds, whenever they begin, do not reveal themselves, in their beginnings, as spirits fully formed; and their growth, it would seem, is somehow and very pertinently connected with the development of their bodies. This development is too perplexing a thing to be settled, even in principle, by any facile hypotheses concerning 'emergence'. Novelty, we may readily conceive, 'emerges' when unlike things come into a relation which formerly did not occur. The *production*, however, of a radically new order of existence from an earlier and disparate order implies, surely, a far heavier strain upon our belief; and if (as most maintain) there was a period in the former history of the universe in which spirits did not and could not exist, there is manifestly something highly mysterious in their subsequent 'emergence'.

To prevent this impasse, it seems easier to suppose that the roots of man's spirit are not to be discovered in particular human minds, and so that the disparity between spirit and matter implies the belief in some cosmic order of spirituality (or at least in something akin to spirit) as natural as our minds and as real as our bodies. This belief, if it were true, might diminish the mystery. Yet, as we saw, it remains cloudy in many of its forms; and it is still cloudy in M. Durkheim's theory of a 'collective mind', or in the hypothesis of a 'racial memory', or according to the more carefully argued and far profounder conceptions of 'natural theology'. On any theory, in the end, this mystery runs deep. It is easy to speak, like some late-born Averroist, of a spiritual radiance, broken up, coloured and particularized by the prisms of our bodies. This is to assume, however, that men's differences and their personal characteristics are fundamentally bodily. On

the theory, men *are* what *their bodies* can attract and refashion from spiritual springs; and this, quite precisely, is *not* what we take our spirits to be. For we believe (not without doubt and hesitation, but very firmly) that although we may be sustained and aided from sources not our own, and perhaps neither mundane nor human, our principal task in this mind-body partnership is to develop our minds in accordance with their own self-accepted standards, and to use our bodies as the mind's servant and its friend.

BIBLIOGRAPHY

THE design of this little book has been to consider the mind-body problem at different levels of discussion. A bibliography groups itself more naturally according to types of theory, and these may be argued at all the levels of our argument.

For a broad review of the essential facts of the problem, as these appear in everyday experience, the introductory portions of C. A. Strong's *Why the Mind has a Body* may be recommended. The later chapters of this book advocate a variety of panpsychism.

On the psychological aspects of the problem as considered in the second chapter, such books as the following should be consulted. On behaviourism, J. B. Watson's *Behavior* (Philadelphia, B. Lippincott). On instinct, W. McDougall's *Outline of Psychology* and *Social Psychology* (London, Methuen), J. Drever's *Instinct in Man* (Cambridge Press), and Lloyd Morgan's *Instinct and Experience* (Methuen). On psycho-neuroses, Rivers's *Instinct and the Unconscious* (Cambridge Press), and Roussy and Lhermitte's *The Psycho-neuroses of War* (English translation, London University Press). On auto-suggestion, Baudouin's *Suggestion and Auto-suggestion* (English translation, London, Allen & Unwin). On psycho-analysis, Freud's *The Psycho-pathology of Everyday Life* (English translation, London, Allen & Unwin), G. C. Jung's *Analytical Psychology* (English translation, London, Baillière, Tindal & Cox), and for a criticism, A. Wohlgemuth's *A Critical Examination of Psycho-analysis* (London, Allen & Unwin).

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The last chapter covers too much ground for a short bibliography to traverse usefully. Among books which may be helpful, B. Russell's *The Analysis of Mind* (London, Allen & Unwin), G. Santayana's *The Life of Reason* [volume, Reason and Science] (London, Constable), E B. Holt's *The Concept of Consciousness* (London, Allen & Unwin), R. W. Sellars's *Evolutionary Naturalism* (London, The Open Court); vol. ii of S. Alexander's *Space, Time, and Deity* (London, Macmillan) may be mentioned along with J. Ward's *The Realm of Ends* (Cambridge Press), and H. Wildon Carr's *A Theory of Monads* (London, Macmillan). Sir Frederick Pollock's and Mr. Joachim's commentaries on Spinoza are the best in English, and on Leibniz, B. Russell's *The Philosophy of Leibniz* (Cambridge Press).

Many of the books cited in this bibliography have already been mentioned in the text; and the other books here referred to are mentioned for the reader's instruction. On the whole, despite so many important discussions during the last two centuries, the most careful and, in many ways, the most instructive discussions of the mind-body problem are to be found in the works of Descartes and of those strongly influenced by him. For Descartes the English reader may consult vol. i of the translation of his *Philosophical Works* by Haldane and Ross (Cambridge Press) He should also consult the earlier dialogues in Malebranche's *Dialogues on Metaphysics* (English translation, London, Allen & Unwin).